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ABSTRACT

This General Mathematics II curriculum reflects the 1980 National Council of Teachers of Mathematics (NCTM) Agenda for Action statement that emphasis in mathematics learning and teaching should be shifted away from isolated computational skills toward problem-solving techniques. The use of calculators and estimation is encouraged. Emphasis both in time and concentration is on developing students' ability to use mathematical techniques, and not on the isolated techniques themselves. Applications for consumers and workers are therefore numerous. Computer literacy is developed through students' use of software that reinforces not only mathematical skills, but also occupation and consumer applications. The course objectives are spelled out, followed by a scope and sequence which includes an approximation of the time to be devoted to each unit. For each unit, a pretest is given, followed by activities and worksheets, with the emphasis on problem solving. A posttest is then given. The units included in the course are: whole numbers, decimals, fractions, ratio and proportion, percent, tables and graphs, probability and statistics, geometry, measurement of geometric figures, integers, algebra, coordinate geometry, and computers. References are included. (MNS)

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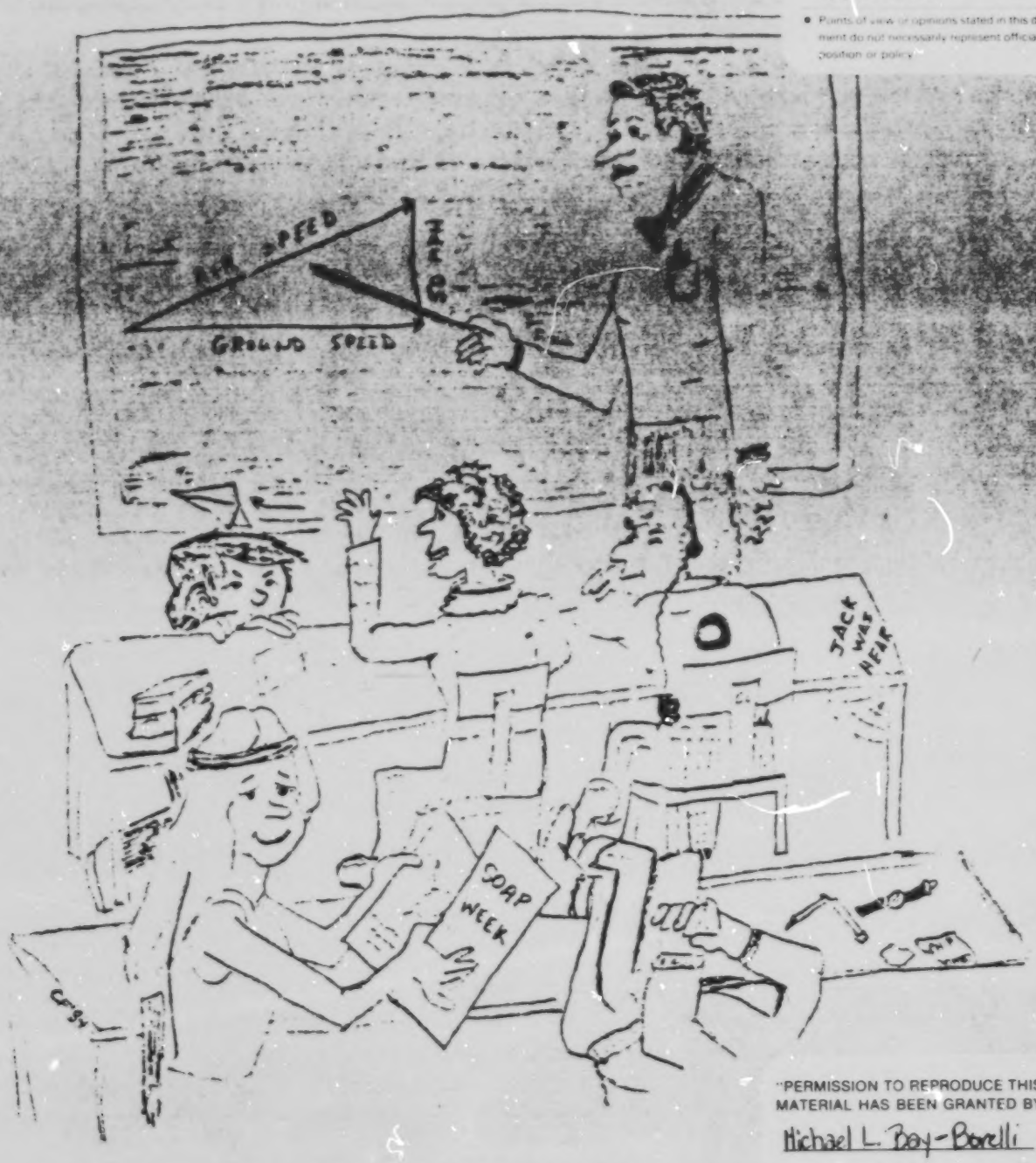
General Mathematics II



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A CoSer Project of the
Cortland-Madison BOCES
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SE 045 395

General Mathematics II

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INTRODUCTION

The General Math II curriculum outlined below reflects the 1980 NCTM Agenda for Action statement that emphasis in mathematics learning and teaching should be shifting away from isolated computational skills toward problem-solving techniques. After an initial review unit on whole numbers, fractions, and decimals, the use of calculators and estimation is encouraged in the balance of the units.

The traditional concepts of algebra and geometry included here for study are organized around their potential use by consumers and workers. Emphasis both in time and concentration should be on developing the students' ability to use mathematical techniques, and not on the isolated techniques themselves that appear in the Scope and Sequence. Computer literacy will be developed through student use of existing software that reinforces not only mathematical skills, but also occupation and consumer applications.

During initial planning of this curriculum, the inclusion of computer programming was left to the teacher's discretion. A decision on this topic, as well as expansion or revision of the objectives, will follow after the first year of implementation.

Outline of Topics for
General Mathematics II

I. Whole Numbers

II. Decimals

III. Fractions

IV. Ratio and Proportion

V. Percent

VI. Tables and Graphs

VII. Probability and Statistics

VIII. Geometry

IX. Measurement of Geometric Figures

X. Integers

XI. Algebra

XII. Co-ordinate Geometry

XIII. Computers

Objectives for General Math II

I. Whole numbers
1. Given any whole number, the student will be able to identify place value to billions.
2. Given any whole number, the student will be able to round the whole number to the nearest billion.
3. Given two or more whole numbers, the student will be able to find the sum.
4. Given two whole numbers, the student will be able to find the difference.
5. Given two or more whole numbers, the student will be able to find the product.
6. Given two whole numbers, the student will be able to find the quotient.
7. Given whole numbers, the student will be able to compute using the rules for order of operations, when +, -, x, and division are involved.
8. Given whole numbers, the student will be able to estimate sums, differences, products, and quotients using rounded numbers.
9. Given whole numbers, the student will be able to find powers of numbers using positive exponents.
10. Given a verbal problem in whole numbers, the student will be able to calculate the correct answer.

II. Decimals
1. Given any decimal numeral, the student will be able to write the decimal through ten-thousandths and give the place value of any digit in a decimal through ten-thousandths.
2. Given any decimal numeral, the student will be able to round a decimal to the nearest thousandth.
3. Given two or more decimal numerals, the student will be able to find the sum.
4. Given two decimal numerals, the student will be able to find the difference.
5. Given two or more decimal numerals, the student will be able to find the product.
6. Given two decimal numerals, the student will be able to find the quotient.
7. Given decimal numerals, the student will be able to estimate sums, differences, products, and quotients using rounded numbers.
8. Given a verbal problem in decimal numerals, the student will be able to calculate the correct answer.

III. Fractions
1. Given two or more fractions/mixed numerals, the student will be able to find the greatest common factor (GCF) of the numbers.
2. Given two or more fractions/mixed numerals, the student will be able to find the least common denominator (LCD) of the fractions/mixed numerals.
3. Given a number, the student will be able to list the factors of a number and identify prime and composite numbers.
4. Given a number, the student will be able to identify whether the number is divisible by 2, 3, 5, 6, 9, and 10.
5. Given a number, the student will be able to write the prime factorization of the number.
6. Given any fraction/mixed numeral, the student will be able to simplify the fraction/mixed numeral to lowest terms.
7. Given a mixed numeral/whole number, the student will be able to write an improper fraction.
8. Given an improper fraction, the student will be able to simplify the improper fraction to a mixed numeral/whole number.

Fractions (continued)

9. Given two or more fractions/mixed numerals, the student will be able to find the sum.
10. Given two fractions/mixed numerals, the student will be able to find the difference.
11. Given two or more fractions/mixed numerals, the student will be able to find the product.
12. Given two fractions/mixed numerals, the student will be able to find the quotient.
13. Given a fraction, the student will be able to write a terminating/repeating decimal.
14. Given a terminating decimal, the student will be able to write a fraction.
15. Given a verbal problem involving fractions/mixed numerals/whole numbers, the student will be able to calculate the correct answer.

IV. Ration and Proportions

1. Given a verbal problem, the student will be able to write a ratio in simplest form.
2. Given a proportion, the student will be able to find the missing number in the proportion.
3. Given a verbal problem, the student will be able to solve the problem using a proportion.

V. Percent

1. Given a percent, the student will be able to write a decimal/fraction for the percent.
2. Given a decimal/fraction, the student will be able to write a percent.
3. Given a simple problem, the student will be able to:
   (a) find a percent of a number.
   (b) find what percent one number is of another.
   (c) find a number when a percent of it is known.
4. Given a word problem involving percent, the student will be able to calculate the correct answer.

VI. Tables and Graphs

1. Given a line or bar graph or chart from newspapers or magazines, the student will be able to interpret the information and find specific pieces of data requested.
2. Given a table or schedule with a row/column format, the student will be able to find requested information.
3. Given a circle or picture graph, the student will be able to interpret the information and find specific pieces of data requested.
4. Given raw data, the student will be able to organize it into meaningful groupings and develop a line or bar graph.

VII. Probability and Statistics

1. Given a verbal problem, the student will be able to find the total number of possible outcomes using a tree diagram.
2. Given a verbal problem, the student will be able to find the simple probability of one event or two independent events (either/or).
3. Given a set of data, the student will be able to find the range, the mean the median and the mode.
4. Given a set of data, the student will be able to make a frequency table for the sample and use the results to find the range, the mean, the median and the mode of the population.

VIII. Geometry

1. Given a pair of lines, the student will be able to identify them as parallel, perpendicular or intersecting.
2. Given any angle, the student will be able to identify it as acute, obtuse, right or straight.
3. Given any two angles of a triangle, the student will be able to compute the third angle.
4. Given any triangle, the student will be able to identify it according to the length of its sides.
5. Given any triangle, the student will be able to identify it according to the measurement of its angles.
6. Given any polygon with at most 12 sids, the student will be able to identify the polygon according to the number of sides.
7. Given two triangles, the student will be able to identify whether or not the triangles are similar.
8. Given a pair of similar triangles, the student will be able to write a proportion to find the measure of the missing side.
9. Given any verbal problem involvin similar triangles, the student will be able to compute the answer.
10. Given any whole number, the student will be able to compute its square.
11. Given any perfect square, the student will be able to give its square root.
12. Given any non-perfect square, the student will be able to estimate its square root to the nearest tenth.
13. Given the lengths of two sides of any right triangle, the student will be able to compute the length of the missing side in radical form or to the nearest tenth using the Pythagorean Theorem.
14. Given any verbal problem involving the Pythagorean Theorem, the student will be able to compute its answer.

IX. Measurement of Geometric Figures

1. Given any polygon, the student will be able to compute its perimeter.
2. Given any circle, the student will be able to compute its circumference.
3. Given any triangle, the student will be able to compute its area.
4. Given any rectangle, the student will be able to compute its area.
5. Given any square, the student will be able to compute its area.
6. Given any parallelogram, the student will be able to compute its area.
7. Given any trapezoid, the student will be able to compute its area.
8. Given any circle, the student will be able to compute its area.
9. Given any figure comprised of two or more polygons/circles, the student will be able to compute the total area by addition of the individual areas of each simple polygon.
10. Given any geometric solid, the student will be able to identify it as one of the following: cylinder, cube, pyramid, rectangular prism, sphere, cone.
11. Given any cube, the student will be able to compute its volume.
12. Given any rectangular prism, the student will be able to compute its volume.
13. Given any cylinder, the student will be able to compute its volume.
14. Given any verbal problem involving perimeter, the student will be able to compute the answer.
15. Given any verbal problem involving circumference, the student will be able to compute the answer.
16. Given any verbal problem involving area, the student will be able to compute the answer.
17. Given any verbal problem involving volume, the student will be able to compute the answer.

X. Integers

1. Given any integer, the student will be able to locate it on the real number line.
2. Given two or more integers, the student will be able to arrange them in decreasing or increasing order.
3. Given two or more integers, the student will be able to find the sum.
4. Given two integers, the student will be able to find the difference.
5. Given two or more integers, the student will be able to find the product.
6. Given two integers, the student will be able to find the quotient.
7. Given a problem using integers and any of the 4 basic operations, the student will be able to estimate the answer.
8. Given a verbal problem requiring the use of integers, the student will be able to set up the problem and solve it from the given information.
9. Given a verbal problem requiring the use of integers, the student will be able to estimate the answer on the information in the problem.

XI. Algebra

1. Given algebraic expressions with no more than 3 variables, powers of the variables no greater than 3, and possible values for each variable, the student will be able to evaluate the expression.
2. Given linear equations in one variable, the student will be able to solve for the variable.
3. Given a verbal phrase involving mathematical quantities, the student will be able to translate the phrase into mathematical symbols.
4. Given verbal problems whose solution requires use of a linear equation, the student will be able to set up the equation using the given information and solve for the desired quantity.
5. Given verbal problems, the student will be able to estimate the required quantity within a reasonable range, based on the information given in the problem.

XII. Coordinate Geometry

1. The student will be able to recognize and use the vocabulary associated with the coordinate plane: quadrant names, x- and y- axes, x- and y- coordinates, origin and ordered pair.
2. The student will be able to plot points from given coordinates and identify the coordinates of a plotted point.
3. The student will be able to graph horizontal and vertical lines given their equations and write the equation, given a horizontal or vertical line.
4. Given a linear equation in two unknowns, x and y, the student will be able to set up a table of values, plot points, and draw the line representing the equation's solution.
5. Given a map or other rectangular format, the student will be able to locate a requested point by the coordinates used or state the coordinates of a given location.

XIII. Computer

1. Given a computer and program disk, the student will be able to boot the disk to use the program for drill or practice.
2. The student will be able to locate and use the keyboard of the available computer to enter data required for drill and practice programs and to control program flow.
3. Given a flow-chart, the student will be able to follow the procedures given.
4. Given a problem or algorithm that uses repetitive steps, the student will recognize the applicability of computer use.

Computer (continued)

5. Given a program in operation that illustrates a mathematical concept under study, the student will be able to draw appropriate conclusions from the computer-generated data.
6. Given a verbal problem, the student will be able to write a simple program that can be used to solve the problem.

SCOPE AND SEQUENCE (with activities included in this packet)

I. Whole Numbers — 10 days
- A. Place Value
- B. Rounding (to billions)
  - City Population
- C. Addition, Subtraction, Multiplication, Division
  - Hotel Management
  - Bod Squad
- D. Order of Operations
  - Operations on Whole Numbers
- E. Estimation
  - Calculators and Estimation
- F. Exponents
- G. Problem-solving
  - Calculators: Patterning
  - Problem-solving with Fibonacci

II. Decimals — 15 days
- A. Reading and Writing (to ten-thousandths)
- B. Place Value
- C. Rounding (thousandths)
- D. Addition, Subtraction, Multiplication, Division
  - Bod Squad
  - Unit Pricing/Comparing Costs
  - Gymnastic Decimals
- E. Estimation
  - Estimating the cost of groceries
- F. Problem-solving
  - Tables/Telephone Rates
  - Gross Pay
  - Service Station Fraud
  - Check Register
  - Writing Checks and Deposit Slips
  - Keeping a Checkbook
  - CAREER: Food Production
  - CAREER: Food Services
  - CAREER: Transportation

III. Fractions — 15 days
- A. Greatest Common Factor, Least Common Multiple
  - GCF Game
  - GCF Methods
- B. Prime and Composite Numbers
- C. Divisibility by 2, 3, 5, 6, 9, 10
- D. Prime Factorization
- E. Reducing to Equivalent Fractions
  - Calculator: Mixed Numbers
- F. Mixed Numerals/Improper Fractions
- G. Addition, Subtraction, Multiplication, Division
  - Bod Squad
  - Find the Majority
  - Calculator Fractions
  - Buying Food
- H. Conversion between Decimals and Fractions

SCOPE AND SEQUENCE

I. Problem-solving
Kitchen problems
Changing a recipe
CAREER: Data Processing
CAREER: Textiles

IV. Ratios and Proportions 8 days
A. Writing Ratios
Ratios
B. Solving Proportions
C. Problem-solving with proportions
Using proportions with money problems

V. Precent 20 days

A. Converting Decimals and Fractions to Percents
Play the percentages
B. Converting Percents to Decimals and Fractions
C. Setting up and Solving Percent Problems
Bod Squad
Percents
Budgeting
Discounts
Set the Sale Price
D. Verbal applications
Sales Tax
Stereo Sale
Consumer game
CAREER: Accounting
CAREER: Distributing
CAREER: Graphic Arts
CAREER: Insurance
CAREER: Real Estate

VI. Tables and Graphs 10 days

A. Reading and Interpreting Bar, Line, Circle and Picture Graphs
Taking Trips
Chart-Reading: Wind Chill Facotr
Almanac Action
Economic Bar Graph/Pictogram
Map Fun
Planting and Picking
Interpreting a Picture Graph
Garden Income and Expenses
B. Construction of Bar and Line Graphs

SCOPE AND SEQUENCE

VII. Probability and Statistics — 10 days

A. Possible Outcomes Using a Tree
   Rolling Dice!
B. Simple Probability (one event; either/or independent events)
   Practice in Probability
C. Range
D. Mean, Median, Mode
E. Organization of data (Frequency Table)
F. Mean, Median and Mode from a Table
G. Problem-Solving
   Statistics: Golfing
   Test Scores
   CAREER: Auto Technology

VIII. Geometry — 15 days

A. Lines: Parallel, perpendicular, intersecting
B. Angles
   Angle Identification
C. Sum of angles of a triangle
D. Identification of triangles by angles and side lengths
   Using Geometric Tools and Drawing Triangles
E. Identification of Polygons (3 to 12 sides)
F. Similar Polygons (Proportions)
G. Problem-Solving with similar triangles
H. Pythagorean Theorem
   1. Square and square root
   2. Estimation of square root
   3. Reading square root table
   4. Problems requiring Pythagorean Theorem
      Triangle Investigation: Right or Not?

IX. Measurement of Geometric Figures — 10 days

A. Area and Perimeter (Circumference)
   1. Triangle
   2. Circle
   3. Parallelogram
   4. Rectangle
   5. Rhombus
   6. Square
   7. Trapezoid
   Perimeters
   Area and Perimeter Cards
B. Addition of Areas
   Areas
C. Geometric Solids
   1. Cylinder
   2. Cube
   3. Rectangular Prism
   4. Pyramid
   5. Sphere
   6. Cone

D. Volume
   1. Cube
   2. Rectangular prism
   3. Cylinder

E. Problem-Solving with Perimeter, Area, Volume
   Remodeling the Family Room
   CAREER: Home Furnishings

X. Integers — 7 days

A. Number Line
B. Ordering and Comparing
C. Addition, Subtraction, Multiplication and Division
   Addition and Subtraction of Integers
   Integers: +, -, x
   Magic Square: Integer Operations (Calculator)
D. Estimation
E. Problem-Solving

XI. Algebra — 15 days

A. Evaluation of Algebraic Expressions
   Magic Algebra
B. Solving Algebraic Linear Equations (one variable)
   Linear Equations with Calculators and Decimals
C. Verbal Phrases and Sentences to Symbols
   Introduction to Word Problems
D. Problem-Solving
   Pattern-Gazing
E. Solving Inequalities
F. Graphing Inequalities on the Number Line

XII. Coordinate Geometry — 10 days

A. Terms
B. Plotting and Identification of Points
   Treasure Hunt
C. Graphing Horizontal and Vertical Line Equations
D. Graphing Linear Equations using a Table
   Line Graphs/Equations
   Straight Line Graphs (Computer)
E. Application of Coordinate Formats to Problems

XIII. Computers — 10 days

A. Use of Software
   (Applications throughout course)
B. Use of Keyboard to Enter Data
   Basic Computer Commands
C. Reading of Flow Chart
   Computer Road Maps
D. Familiarity with Computer Use
   Program the Computer
E. Interpreting Output

Whole Numbers

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Whole Numbers Pre-Test Name: _____

1. In the number 6,789,051,234, which digit is in the millions place? 1. _____

2. Round 6,789,051,234 to the nearest hundred-thousand. 2. _____

3. Add:
$$\begin{array}{r} 200{,}794 \\ 1{,}362 \\ +\ 8{,}087 \end{array}$$ 3. _____

4. Subtract:
$$\begin{array}{r} 6{,}017 \\ -\ 849 \end{array}$$ 4. _____

5. Multiply: $36 \times 20 \times 193$ 5. _____

6. Divide: $36\overline{)6948}$ 6. _____

7. Compute: $(27 - 3^2) - (2 \times 3) + 1$ 7. _____

8. Estimate $519 + 802$ by rounding each number to the nearest appropriate unit. 8. _____

9. Estimate $6{,}042 - 4{,}039$ 9. _____

10. Estimate $19 \times 4{,}012$ 10. _____

11. Estimate $890 \div 10$ 11. _____

12. $4^2 + 5^3 =$ 12. _____

13. Mr. Clean pays the people who wash cars at the CLEAN CAR DRIVE-AWAY $27 per day. At the end of the week, five people had worked 6 days and 7 people had worked three days. How much money did Mr. Clean pay in wages? 13. _____

City Population (reading chart rounding large numbers)

Whole Number Rounding

Jamie knew how many people lived in the city where he lived, but he did not know how his city compared to other cities. He used an atlas to locate other cities and to discover how many people lived there. This is what he found.

Anchorage	173,017	Lima	4,990,000	Rio de Janiero	5,184,292
Buenos Aires	2,972,453	London	7,340,500	Santiago	3,850,000
Cairo	4,961,000	Los Angles	2,809,596	Sao Paolo	5,186,752
Calcutta	9,148,746	Manila	1,435,500	Shanghai	10,820,000
Capetown	691,296	Melbourne	2,394,117	Sydney	2,725,064
Casablanca	2,350,000	Mexico City	8,768,033	Tokyo	8,796,293
Honolulu	762,874	Moscow	8,011,000	Vancouver	440,139
Leningrad	4,588,000	Paris	2,590,771		

1. Use the chart above to help you fill in the blanks.

   A. Largest city listed. _____

   B. Smallest city listed. _____

   C. City the same size as Rio de Janiero (to the nearest hundred thousand) _____

   D. People in Finland: 4,693,300 cities with as many people as Finland (to nearest million). _____

   E. People in Paraguay: 2,640,400. City with as many people as Paraguay (to nearest 500 thousand). _____

   F. Find the 10 largest cities - put them in order from large to small.

2. Jamie also found the number of people in some of the largest countries. Use this list to complete the table and questions.

		NUMBER OF PEOPLE TO THE NEAREST:	
	THOUSAND	A. HUNDRED THOUSAND	B. HUNDRED MILLION
China	974,570,000	_____	_____
India	698,801,000	_____	_____
U.S.S.R.	254,769,000	_____	_____
U.S.A.	213,121,000	_____	_____

C. Does any country have nearly 1 billion people? _____

If so, which one? _____

Calculators and Estimation

Teacher notes for student worksheets
(from The Mathematics Teacher)

Materials: Worksheets
Calculators for each student if possible

Objectives: Students will estimate divisors, given a dividend, that will yield a quotient within an acceptable range.

Students will "narrow down" to within a given range factors in a continued multiplication problem.

Students will use calculators to check their estimates.

Instructions: Go through several samples with the class. Individuals or small groups may work together.

On sheet 2, students may need some guidance on multiplying by a number less than 1.

Calculators and Estimation: Name: _____
Sheet 1

I. Estimate the second factor so that the product will fall within the given range. Check your estimate with a calculator.

Example: 12 x _____ Range: (5000, 5500)

12 x 400 = 4800 Too small

12 x 450 = 5400 We did it in two tries!

Try these. Indicate the number of tries in the space provided.

	Start	Range	Number of Tries
1.	19 x _____	(800, 850)	_____
2.	25 x _____	(2000, 2200)	_____
3.	11 x _____	(550, 570)	_____
4.	105 x _____	(1000, 1100)	_____
5.	176 x _____	(20, 30)	_____
6.	50 x _____	(4670, 4700)	_____

II. Estimate the divisor so that the quotient will fall within the given range. Check your estimate with a calculator.

Example: 975 - _____ Range: (10, 20)

975 - 95 = 10.26 We did it in one try!!

Try these. Indicate the number of tries in the space provided.

	Start	Range	Number of Tries
1.	850 - _____	(90, 150)	_____
2.	1050 - _____	(200, 210)	_____
3.	50 - _____	(210, 220)	_____
4.	125 - _____	(4200, 4400)	_____
5.	4360 - _____	(150, 200)	_____
6.	11 - _____	(550, 600)	_____

Calculators and Estimation
Sheet 2

Name: _____

Use the start number and usccessive multiplication to obtain a product in the given range.

Example:	Start	Range
	12	(5000, 5500)
1.	12 x 400 = 4800	Too small
2.	4800 x 1.2 = 5760	Too large
3.	5760 x 0.95 = 5472	We did it in three steps.

See if you can do the following in as few steps as possible. Record each product in the spaces provided.

	Start	Range	Number of steps
1.	11 x	(900, 1000)	
	____ _____	_____	_____ ____
2.	400 x	(175, 195)	
	____ _____	_____	_____ ____
3.	1.1 x	(14 100, 14 200)	
	____ _____	_____	_____ ____
4.	15 x	(8000, 8100)	
	____ _____	_____	_____ ____
5.	14,222 x	(7200, 7400)	
	____ _____	_____	_____ ____
6.	0.3 x	(280, 299)	
	____ _____	_____	_____ ____
7.	π x	(100, 110)	
	____ _____	_____	_____ ____
8.	12,100 x	(36, 37)	
	____ _____	_____	_____ ____

Hotel Management

Multiplication check - a different way!

Here's a different way to check multiplication when one of the factors is a 2 - digit number that can be written in a simpler way.

```
 1854
x  45
 9270
7416
83,430
```

1 Do problem

2 Think of 45 as 5 x 9

```
  1854
x    9
16,686
x    5
83,430
```

3 Multiply again by <u>each</u> of the factors

Use this method to check your answers to these problems!

1. Marsha Work manages the Bigtime Hotel. She pays each of the 25 cleaning people $180 per week. How much does this cost the hotel each week?

2. The hotel employs 42 people who work as waitresses and waiters. They <u>each</u> make a base salary of $215 per week. How much must the hotel pay these people each week?

3. The Bigtime Hotel has 345 rooms that cost $36 a night. If each room is occupied, how much will the hotel receive for one night's business?

4. If the hotel has rented every room for the <u>entire</u> month of September, how much money will the hotel receive? (Hint: use #3)

5. Mr. White is paid $1,452 a month as head chef at the hotel. How much does he make in one year?

Bob Squad: Whole Numbers X *Name:* _____

Class or small group work

1. Figure out your age in days. (Don't forget leap year)

2. Figure out your age in

   hours: _____
   minutes: _____
   seconds: _____

3. The average person breathes at a rate of 17 breaths per minute. About how many breaths have you taken in your life? _____

4. The smaller the size of an animal, the faster the heartbeat. A man's heart pumps, on average, 70 beats per minute; a woman's pumps 76 beats; a child's pumps 130 beats. Find your pulse by: counting the number of beats in 10 seconds:

   _____
   Multiply: x _____?
   Pulse = _____

5. The human heart is about the size of a fist. The mass of a man's is about 312 grams; a woman's is 255 grams. How much bigger is a man's heart in mass?

6. The average human body has 50 trillion cells. Write this number: _____

7. There are 160,934 kilometers of blood vessels in a body. Round this number to the nearest hundred: _____
   to the nearest hundred-thousand: _____

1. Using the birthday of a friend, figure out his/her age in days.

2. Figure out that age in

   hours: _____
   minutes: _____
   seconds: _____

3. How many breaths has this person taken in his/her life? _____

4. Using your own pulse, find how many times your heart beats in 1 hr. _____
   How many times has your heart beat in your life? _____

5. What is the total mass of the hearts in your family (or whoever you live with)? _____

6. A newborn baby has 26,000,000,000 cells. Write this number a different way: _____

7. There are about 50 kilometers between Cortland and Syracuse. How many times would one person's blood vessels stretch between Cortland and Syracuse?

Operations on Whole Numbers
Teacher Notes for Student Worksheets
(Edited; from The Mathematics Teacher: November, 1980)

Materials: Worksheet (1 at a time) for each student
Overhead projector (optional)

Objectives: Students will experiment with order of operations on whole numbers until reaching a correct solution.

Students will practice the four basic operations and parentheses with whole numbers.

Instructions: Depending on the level of the class, Sheet 1 may be simply introduced and assigned or (preferably) used as a class activity. Discussion of different suggested solutions will help motivate interest and reinforce the operations.

Sheet two ie. more difficult and will not be possible without multiple parentheses. However, the numbers are given in an order which will give a solution by just inserting the appropriate signs.

Answers: Sheet 1

1. $10 - (6 + 3 + 1) + 5 = 5$
2. $11 + 1 - 9 - (8 \div 8) = 2$
3. $11 - [(20 - 15) \times 3 - 10] = 6$
4. $(11 + 3) - 12 + 18 - 12 = 8$
5. $(4 + 16) \div 10 - (25 - 24) = 1$
6. $17 - 17 + (14 - 13) \times 7 = 7$
7. $(9 - 9) + (5 + 4) + 2 = 22$
8. $(7 - 6) + [(3 - (10 - 5)] = 2$
9. $5 - (11 + 21) - 8 + 6 = 7$
10. $(17 - 1) \div [(6 - 2) - 2] = 8$
11. $(10 + 1) - 11 + 9 - 4 = 5$

Operations on Whole Numbers Name _____
Sheet 1

Instructions: Use the five numbers given and the +, -, -, x signs and parentheses ( ), to make the total given.

Example:
Number Choices: 7, 8, 1, 9, 9 total: 16 (9 - 9) x (7 + 8 + 1) = 16

1. 1, 5, 3, 6, 10 total: 5 _____
2. 8, 11, 9, 1, 8 total: 2 _____
3. 11, 10, 15, 20, 3 total: 6 _____
4. 12, 18, 3, 11, 12 total: 8 _____
5. 4, 16, 10, 24, 25 total: 1 _____
6. 17, 14, 7, 17, 13 total: 7 _____
7. 2, 9, 5, 9, 4 total: 22 _____
8. 3, 6, 10, 5, 7 total: 2 _____
9. 8, 6, 11, 5, 21 total: 7 _____
10. 6, 1, 2, 2, 17 total: 8 _____
11. 10, 4, 1, 11, 9 total: 5 _____

Operations on Whole Numbers Sheet 2

On this sheet, use the same five numbers, in the order given, to make the integers from 1 to 11. Brackets and braces will be necessary. Some hints have been given.

1. Sample: (11 + 14 - 19 + 3) - 9 = 1
2. 9 14 [(19 3) 1] = 2
3. 11 [(19 9) 14] 3 = 3
4. 19 9 11 14 3 = 4
5. 9 14 [(11 19) 3] = 5
6. 11 19 9 14 3 = 6
7. 14 [(3 19) 9] 11 = 7
8. 9 [(11 3) (14 19)] = 8
9. 11 3 14 19 9 = 9
10. 19 9 11 14 3 = 10
11. 9 19 14 3 11 = 11

24

Calculators: Patterning

Teacher notes from student worksheets
(from The Mathematics Teacher: May, 1978)

Materials: Student worksheets
Calculator for each student if possible

Objectives: Students will do simple calculations with calculators.

Students will find patterns in their calculated answers to estimate answers to rebated problems.

Instructions: The three worksheets may be used separately in a whole number unit.

Students can work together in samll groups or individually. Any of the sheets would also be useful in teaching problem-solving by observing patterns.

Calculators: Patterning
Sheet 1

Name _____

For each part, do the problems in the first column with a calculator. Then, by looking for patterns in the results, predict the answers to the problems in the second column without actually calculating them.

A.

(1 x 9) + 2 = _____ (12,345 x 9) + 6 = _____

(12 x 9) + 3 = _____ (1,234,567 x 9) + 8 = _____

(123 x 9) + 4 = _____ (_____ x 9) + __ = 111,111,111

B.

(9 x 9) + 7 = _____ (9,876 x 9) + 4 = _____

(98 x 9) + 6 = _____ (9,876,543 x 9) + 1 = _____

(987 x 9) + 5 = _____ (_____ x 9) + __ = 888,888

C.

(1 x 9) - 1 = _____ (4,321 x 9) - 1 = _____

(21 x 9) - 1 = _____ (7,654,321 x 9) - 1 = _____

(321 x 9) - 1 = _____ (_____ x 9) - 1 = 5,888,888

D.

(1 x 8) + 1 = _____ (1,234 x 8) + 4 = _____

(12 x 8) + 2 = _____ (12,345,678 x 8) + 8 = _____

(123 x 8) + 3 = _____ (_____ x 8) + __ = 987,654

E.

(99 x 1) + 1 = _____ (99 x 5) + 5 = _____

(99 x 2) + 2 = _____ (99 x 8) + 8 = _____

(99 x 3) + 3 = _____ (99 x __) + __ = 700

Calculators: Patterning
Sheet 2

Name _____

For each part, do the problems in the first column with a calculator. Then, by looking for patterns in the results, predict the answers to the problems in the second column without actually calculating them.

F.

99 x 9 = _____

99 x 8 = _____

99 x 7 = _____

99 x 5 = _____

99 x 2 = _____

99 x __ = 396

G.

37 x 3 = _____

37 x 6 = _____

37 x 9 = _____

37 x 15 = _____

37 x 24 = _____

37 x __ = 666

H.

999,999 x 2 = _____

999,999 x 3 = _____

999,999 x 8 = _____

999,999 x 6 = _____

999,999 x 9 = _____

999,999 x __ = 6,999,993

I.

15,873 x 7 = _____

15,873 x 14 = _____

15,873 x 21 = _____

15,873 x 35 = _____

15,873 x 56 = _____

15,873 x __ = 777,777

J.

3,367 x 3 = _____

3,367 x 6 = _____

3,367 x 9 = _____

3,367 x 15 = _____

3,367 x 21 = _____

3,367 x __ = 80,808

Calculators: Patterning Name_____
Sheet 3

For each part, do the problems in the first column with a calculator. Then, by looking for patterns in the results, predict the answers to the problems in the second column without actually calculating them.

K.

$(11)^2 =$ _____ $(11{,}111)^2 =$ _____

$(111)^2 =$ _____ $(11{,}111{,}111)^2 =$ _____

$(1{,}111)^2 =$ _____ (_____)$^2 = 12{,}345{,}654{,}321$

L.

$(34)^2 =$ _____ $(33{,}334)^2 =$ _____

$(334)^2 =$ _____ $(33{,}333{,}334)^2 =$ _____

$(3{,}334)^2 =$ _____ (_____)$^2 = 111{,}111{,}555{,}556$

M.

$(67)^2 =$ _____ $(66{,}667)^2 =$ _____

$(667)^2 =$ _____ $(6{,}666{,}667)^2 =$ _____

$(6{,}667)^2 =$ _____ (_____)$^2 = 4{,}444{,}444{,}488{,}888{,}889$

N.

$(98)^2 =$ _____ $(99{,}998)^2 =$ _____

$(998)^2 =$ _____ $(99{,}999{,}998)^2 =$ _____

$(9{,}998)^2 =$ _____ (_____)$^2 = 999{,}996{,}000{,}004$

O.

$(49)^2 =$ _____ $(49{,}999)^2 =$ _____

$(499)^2 =$ _____ $(4{,}999{,}999)^2 =$ _____

$(4{,}999)^2 =$ _____ (_____)$^2 = 24{,}999{,}990{,}000{,}001$

Problem-Solving with Fibonacci:

Use of squaring and calculators

Teacher Notes for student worksheets
(from The Mathematics Teacher: January, 1981)

Materials: One set of worksheets for each student calculators (for sheet 3)

Objectives: Students will find patterns in various manipulations of the Fibonacci sequence.

Students will round decimals to the nearest thousandth, after computing quotients on a calculator.

Instructions: Sheets 1 and 2 may be used near the end of a whole number unit. Sheet 3 requires squaring and rounding of decimals and therefore, would be useful in a decimal unit.

In general, students should be allowed as much time as they need to find the "answers" at each step. Their descriptions of the patterns may vary in levels of generalization.

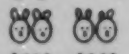
Sheet 3: #2. The sum of the squares of the first N terms of the sequence = the product of the Nth and (n + 1) st terms # 3. The fractions converge to 1.618 (actually the Golden Ratio $(\sqrt{5} + 1) / 2.$)

Fibonacci Sequence: Sheet 1 Name_____

We start with a pair of rabbits born in January. One is male and the other is female. We then assume that

a. rabbits begin to bear young two months after their own birth, and
b. after reaching an age of two months, each pair of rabbits produces another male and female pair each month thereafter.

Results of the first five months are shown here.

Month	*Diagram of pairs*	*Number of pairs*
January		1
February		1
March		2
April		3
May		5
June		—

This birth pattern leads to the sequence of numbers called the Fibonacci sequence. It is named after Leonardo Fibonacci, an Italian mathematician who lived in the Middle Ages.

1. Complete the diagram and find the number of rabbits for June.

2. What is the next number after that in the sequence? _____

   What is the rule for finding the next number in the sequence?

   _____

   _____

3. How many rabbits will be born in December? _____

   How many rabbits will there be in all at the end of the year? _____

4. If a and b are two consecutive terms in the Fibonacci sequence, what would be an expression for the next term?

   _____

Fibonacci Sequence
Sheet 2

Name _____

1. Complete these sums of consecutive Fibonacci numbers.

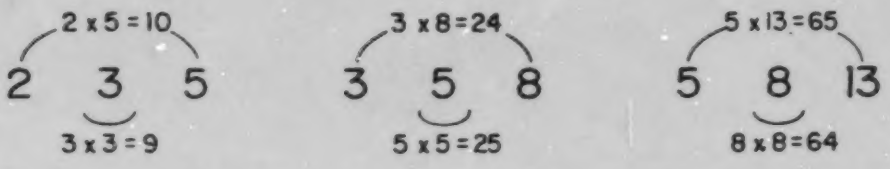
1 + 1	=	_____
1 + 1 + 2 =	=	_____
1 + 1 + 2 + 3	=	_____
1 + 1 + 2 + 3 + 5	=	_____

How are these sums related to the original sequence?

_____

_____

2. Study the pattern shown for three consecutive Fibonacci numbers.



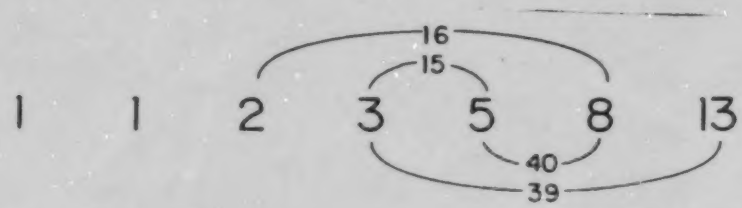
Try it yourself for the Fibonacci numbers 8, 13, and 21.

Describe the pattern shown.

_____

_____

3. Study the pattern shown for four consecutive Fibonacci numbers.



Try it yourself for the Fibonacci numbers 5, 8, 13, and 21.

Describe the pattern shown.

_____

_____

Fibonacci Sequence
Sheet 3

Name _____

1. Write the squares of the first 8 terms of the Fibonacci sequence.

   Add each pair of consecutive squares to make a new sequence.

   How are the terms in the new sequence related to those of the Fibonacci sequence?

   _____

   _____

2. Look for a pattern. Then write the next two lines.

$1^2 + 1^2 = 1 \cdot 2$

$1^2 + 1^2 + 2^2 = 2 \cdot 3$

$1^2 + 1^2 + 2^2 + 3^2 = 3 \cdot 5$

$1^2 + 1^2 + 2^2 + 3^2 + 5^2 = 5 \cdot 8$

_____ = _____

_____ = _____

3. Use your calculator to write these ratios of successive Fibonacci numbers as decimals rounded to the nearest thousandths.

(a) $\frac{1}{1}$ = _____

(b) $\frac{2}{1}$ = _____

(c) $\frac{3}{2}$ = _____

(d) $\frac{5}{3}$ = _____

(e) $\frac{8}{5}$ = _____

(f) $\frac{13}{8}$ = _____

(g) $\frac{21}{13}$ = _____

(h) $\frac{34}{21}$ = _____

(i) $\frac{55}{34}$ = _____

(j) $\frac{89}{55}$ = _____

(k) $\frac{144}{89}$ = _____

(l) $\frac{233}{144}$ = _____

What do you notice about the decimal values?

_____

_____

_____

Whole Numbers Post-Test Name _____

1. In the number 1,234,567,089 which digit is in the ten-millions place? 1. _____

2. Round the number 1,234,567,089 to the nearest ten-thousand. 2. _____

3. Add:
$$\begin{array}{r} 40{,}298 \\ 5{,}086 \\ +4{,}277 \\ \hline \end{array}$$ 3. _____

4. Subtract:
$$\begin{array}{r} 40{,}298 \\ -5{,}089 \\ \hline \end{array}$$ 4. _____

5. Multiply: $28 \times 75 \times 172$ 5. _____

6. Divide: $75\overline{)12975}$ 6. _____

7. Compute: $(36 - 3) \div (2 + 5) - 3$ 7. _____

8. Estimate $696 + 399$ 8. _____

9. Estimate $8009 - 3995$ 9. _____

10. Estimate 98×5002 10. _____

11. Estimate $9996 \div 10$ 11. _____

12. $4 - 2$ 12. _____

13. A local merchant contributed $8,946 to the youth home for summer camp scholarships. If summer camp costs $142 per child, how many children can the youth home send to camp? 13. _____

Decimals

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Decimals Pretest Name _____

Show your work

1. Write the word statement twelve and sixty-five thousandths as a numeral. 1. _____

2. Round to the nearest hundreth: 4,8673 2. _____

3. Find the sume of 9 + 1.4 + .206 + .86 3. _____

4. Find the difference between 9.4 - 3.74 4. _____

5. Find the product of 3.86 x 2.4 5. _____

6. Find the quotient of 28.2 - 1.2 6. _____

7-10 Estimate to the nearest whole number

7. 8.72 + 12.904 + 1.3 + 6.65 + 15.09 + 5.389 7. _____

8. 41.08 - 19.59 8. _____

9. 12.46 x 9.86 9. _____

10. 48.49 ÷ 11.73 10. _____

11. Bill bought three pair of socks at $.99 per pair, a shirt for $12.89 and a tie for $9.35.

How much change did Bill receive from a fifty dollar bill? _____

Estimating the Cost of Groceries

Name _____

When grocery shopping, you can use rounding of decimals to estimate the total cost of the items you are buying. By rounding, you can add faster as you shop.

Column A shows the actual prices of certain itesm on a register tape. In Column B, round the prices to the nearest dime or dollar amount. Find the total for each column. What is the difference between the two columns?

	Column A Actual Price		Column B Rounded Price
	$1.78	1.	$2.00
	.45	2.	.50
	.33	3.	_____
	2.79	4.	_____
	.97	5.	_____
	.83	6.	_____
	.72	7.	_____
	6.58	8.	_____
	3.33	9.	_____
	.24	10.	_____
	.17	11.	_____
	.52	12.	_____
Total	_____	Total	_____

Difference between totals _____

Bod Squad: Decimals X Name_____

Class or Small-group work

1. The average adult body has 1.67 square meters of skin. How many square meters of skin are in this class? _____

2. Every time you breathe you inhale .6 liters of air. If you breathe 15 times per minute, how many liters of air have you inhaled in:
one minute: _____
one hour: _____
one day: _____

3. Every time your heart beats, 0.06 liters of blood passes through your heart. If your heart beats 72 times per minute, how many liters pass through your heart in:
one minute? _____
one hour? _____
one day? _____

4. a. Round 1.67 to nearest tenth: _____

b. Using your answer to part a find the answer to question #1 again: _____

c. What is the difference (error) between the two answers (#1 and #4b)? _____

1. How many square meters of skin among the players on a: basketball team? _____
baseball team? _____
football team? _____

2. How many liters of air do you inhale in 2.5 minutes? _____
3.6 hours? _____
30.5 days? _____

3. How many liters of blood pass through your heart in:
1.6 minutes? _____
2.6 hours? _____
6.8 days? _____

4. a. Round 1.67 to the nearest whole number: _____

b. Using your answer to part a, find the answer to question #1 (left column) again: _____

c. What is the difference between the two answers (#1 & #4b)? _____

Unit Pricing/Comparing Costs Name_____

Discuss: *Generic

*Brand Name

*Assume quality is equal

*Find cost per unit of each product

*Compare unit costs

*Find which product is the best buy

Generic Brand		Brand Name Brand	
aspirin, 200 tablets, 5 g each	$2.25	Star Aspirin, 500 g	$1.60
cold pills, 25 g, 100 tablets	3.50	Ace Cold Pills, 50 g, 100 tablets	8.00
cough syrup, 300 ml	2.91	Super Syrup, 350 mg	3.50
vitamins, 150 g	3.00	Peppy Vitamins, 200 g	5.00

Generic	Brand Name
1. aspirin,_____ per g	Star Aspirin, _____ per g
2. cold pills, _____ per g	Ace Cold Pills, _____ per g
3. cough syrup, _____ per ml	Super Syrup, _____ per ml
4. vitamins, _____ per g	Peppy Vitamins, _____ per g

Tables/Telephone Rates

Name _____

DIAL-DIRECT						
sample rates from Chicago to:	WEEKDAY full rate		EVENING 35% discount		NIGHT & WEEKEND 60% discount	
	First Minute	Each Additional Minute	First Minute	Each Additional Minute	First Minute	Each Additional Minute
Atlanta, Ga	.50	.34	.32	.23	.20	.14
Boston, Mass	.50	.34	.32	.23	.20	.14
Denver, Colo	.52	.36	.33	.24	.20	.15
Detroit, Mich	.46	.32	.29	.21	.18	.13
Los Angeles, Cal	.52	.36	.33	.24	.20	.15
Miami, Fla	.52	.36	.33	.24	.20	.15
Milwaukee, Wis	.43	.29	.27	.19	.17	.12
Minneapolis, Minn	.48	.34	.31	.23	.19	.14
New Orleans, La	.50	.34	.32	.23	.20	.14
New York, N.Y.	.50	.34	.32	.23	.20	.14
Seattle, Wash	.52	.36	.33	.24	.20	.15
Washington, D.C.	.50	.34	.32	.23	.20	.14

OPERATOR-ASSISTED				
sample rates from Chicago to:	STATION-TO-STATION		PERSON-TO-PERSON	
	First 3 Minutes	Each Additional Minute	First 3 Minutes	Each Additional Minute
Atlanta, Ga	$2.05	See Dial-Direct tables above under time period that applies (Weekday, Evening, or Night & Weekend)	$3.15	See Dial-Direct tables above under time period that applies (Weekday, Evening, or Night & Weekend)
Boston, Mass	2.05		3.15	
Denver, Colo	2.15		3.30	
Detroit, Mich.	1.95		2.95	
Los Angeles, Cal	2.15		3.30	
Miami, Fla	2.15		3.30	
Milwaukee, Wis	1.75		2.75	
Minneapolis, Minn	2.00		3.05	
New Orleans, La	2.05		3.15	
New York, N.Y.	2.05		3.15	
Seattle, Wash	2.15		3.30	
Washington, D.C.	2.05	3.15	3.15	
Rates in effect September 13, 1977 and do not include tax charges				

Day: 6AM - 5 PM

Evening: 5PM - 11PM

Night: 11PM - 6AM

Use the charts to answer these questions:

1. What is the difference in price between a 3-minute, dial-direct evening call & a 3-minute, station-to-station call, to Miami?

2. What is the price of a 15-minute call to New York, station-to-station in the evening?

3. What is the price of a 12-minute call to Boston, person-to-person on a Monday at 10 in the morning?

4. Find the difference in cost between a 5-minute call to Los Angeles dialed direct on a Saturday, & a 5-minute call made station-to-station on a Wednesday afternoon.

5. What is the difference in cost between a 10-minute call dialed direct to Atlanta at 11 in the morning or 12 midnight?

6. Find the price of a 16-minute station-to-station call to Minneapolis on a Sunday at 10:30 AM.

7. What is the difference in price between a 9-minute station-to-station & a 9-minute person-to-person call to Denver at 8 PM on a Friday?

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Gross Pay

Name _____

Find the gross pay for each employee. For all hours over 40, time and a half is given.

TIME

Employee	M	T	W	Th	F	Total	Reg.	O.T.	Rate	Gross Pay
Frare, Chris	8	8½	8	8	9½		40		$3.40	
DiSanto, Joe	8½	8½	8½	8½	8½		40		3.90	
Fry, Paulette	9	9	8	8	9		40		4.00	
DiLucci Jackie	8	8	8	8	8		40		4.50	
Homer, Hugh	8	8	9	9½	10		40		5.00	
Cortlandt, Pete	8½	8	8½	8	9½		40		6.00	

Service Station Fraud: Condensed from The Mathematics Teacher

(Notes for class discussion)

I. Common Frauds

A. Slick oil tricks
   1. Inserting dipstick only half-way
   2. "Filling" with an empty can

B. Cutting capers
   1. Fan belt, radiator hose, heater hose
   2. Wires leading to dashboard warning lights

C. Dirty Filters - indication of outside dirt is not dangerous

D. Battery & Assault
   1. Spilling water on battery - informing driver it's leaking
   2. Alka-Seltzer tablet dropped in a terminal

E. Shocking shocks - squirting oil on them to simulate failure.

F. Tire Tricks
   1. Ice picks
   2. Pointing out minor scrapes, scratches as major problems

G. Credit Discredits
   1. Changing numbers e.g. 1.50 7.50
   2. Making out 2 slips with the card and filling in one later.

II. Avoiding Frauds

A. Stay with the car; watch while attendant work under hood.
B. Get 2nd opinions.
C. Plan trips to avoid out-of-the-way fill-ups.
D. Keep credit card duplicate slips.
E. Maintain the vehicle.

Condensed from The Mathematics Teacher; January 1982

Gas Station Name_____

The Jolly Peddlar's Finest Hour

1. Mrs. Jones stopped for gas at the Jolly Peddlar service station. When the friendly attendant checked the oil, he short sticked and told Mrs. Jones, "You're down one quart." Oil sells to the station for 47¢ per quart. He charges $1.10 per quart. If he sells 50 quarts of oil, how much does he make? If he uses the empty-oil-can trick, how much does he make on 50 sales?

2. While the attendant is checking under the hood of Mrs. Jones's car, he deftly slices a fan belt. Fan belts sell to the dealer for $1.47 and to the customer for $3.75 plus $5.00 installation costs. How much will a gas station clear if this scheme is repeated 50 times?

3. Suddenly, a warning light blinks on the dashboard. The attendant (having surreptitiously snipped a wire) expresses concern and fixes the problem by installing a new alternator. He charges only $75 to replace it. If an alternator costs him $23, how much can he make if he successfully fools 50 people?

4. An air filter costs a service station $1.93. Their price to customers (installed) is $5.50. The attendant shows Mrs. Jones how dirty her air filter is. She asks him to change it. After working this fraud on 50 people, how much has he cleared?

5. Mr. Simpson pulls into the Jolly Peddlar station as Mrs. Jones pulls out. When the attendant checks under the hood of Mr. Simpson's car, he slips an Alka-Seltzer tablet into the battery. Alarmed at the bubbling he sees, Mr. Simpson asks the attendant to replace the battery. Batteries sell to the station for $27.50 and to the customer for $49.95. What will 50 successful tries of this fraud net the Jolly Peddlar?

6. Mr. Simpson also notices that the left rear tire on his car is very flat. He does not notice the ice pick in the attendant's hand. On each new tire sold, the station makes $12.95. When he has sold 50 tires in this way, how much will he have made?

7. Mr. Simpson's attention is called to the oil on his shock absorbers by the concerned attendant. "You're going to run off the road if you try to drive with those worn shocks. For just $37, I'll fix you right up!" If he buys the shocks for $16, how much has the Jolly Peddlar made when Mr. Simpson gratefully agrees to get new shocks? What would he make on 50 such generous deals?

8. The Jolly Peddlar has three credit card customers after Mr. Simpson leaves. They charge purchases for $4.10, $6.00, and $1.50. After slight alterations, his copy of the slips reads $8.90, $16.00, and $7.50. How much did this sleight of hand net him? If he averages this much every day on credit card fraud, what will he make in 50 days?

9. If the Jolly Peddlar is convicted of fraud after fooling 50 people on the empty-oil-can trick and is fined the maximum fine of $299, will he lose money or come out ahead? By how much?

10. Are there any of the schemes described where he would make money even if he were fined $299 after 50 successful tries?

Name _____

Gymnastic Decimals

Directions:

Each student in the gymnastic competition received six scores. To find the average score for each student, cross out the highest and lowest scores and average the four remaining scores. For the vaulting event, estimate each person's average before computing it.

Directions:

Each student in the gymnastic competition received six scores. To find the average score for each student, cross out the highest and lowest scores and average the four remaining scores. For the vaulting event, estimate each person's average before computing it.

Floor exercise

	1	2	3	4	5	6	Avg.
Tammy	6.2	5.8	7.2	5.9	6.9	7.3	___
Heather	7.2	7.2	7.0	7.0	6.9	7.5	___
Stacey	5.9	4.9	5.3	5.6	5.8	6.0	___

Horizontal bar

	1	2	3	4	5	6	Avg.
Lee	4.2	3.8	4.9	4.8	4.7	5	_____
Scott	4.8	5.2	5.5	6.0	5.3	5	_____
Brett	5.0	5.0	5.0	5.0	5.4	5	_____

Vaulting

	1	2	3	4	5	6	Est. avg.	Actual avg.
Luke	8.0	6.9	7.2	7.0	7.1	7.7	___	___
Tony	7.1	6.9	7.6	7.4	7.3	7.6	___	___
Matt	6.9	6.8	7.0	7.2	6.9	7.1	___	___

Uneven parallel bars

	1	2	3	4	5	6	Avg.
Norma	6.7	6.2	6.7	6.0	6.6	6.3	_____
Nancy	7.2	6.9	6.7	6.2	6.8	6.6	_____
Barb	7.0	6.7	6.7	6.8	7.0	6.7	_____

- Circle the name of the winner for each event.
- Which gymnast had the highest average score? _____ the lowest? _____

Check Register Name_____

On December 1, Holly Berry had a balance in her checking account of $452.16. During the month she wrote the checks and made the deposits listed below. Record the beginning balance, the checks, and the deposits in the check register given.

December	Check #	Checks Issued to Deposits	Why check Issued	Amount
1	256	M.R. Swartz & Son	Rent	$175.00
3	257	Little Jim's Big N	groceries	37.58
4		Deposit from paycheck		148.62
7	258	Japanese Motors	lub/oil/filter	19.41
9	259	Tullip Co.	Christmas shopping	75.00
10	260	Cash	pocket change	25.00
11		Deposit from paycheck		148.62
11	261	W.J. Streets, Inc.	Christmas shopping	129.98
12	262	Pittsburg Sales	Misc. shopping	29.68
14	263	Niagara Mohawk	electric bill	45.04
16	263	Book-of-the-Month Club	monthly selection	13.57
18	264	Deposit from paycheck		148.62
18	265	NY State Elect. & Gas	gas bill	121.53
18	266	LeMon Motors	car payment	81.47
18	267	Little Jim's Big N	groceries/supplies	59.89

PLEASE BE SURE TO DEDUCT ANY PER CHECK CHARGES OR SERVICE CHARGES THAT MAY APPLY TO YOUR ACCOUNT

CHECK NO	DATE	CHECK ISSUED TO OR DESCRIPTION OF DEPOSIT	(-) AMOUNT OF CHECK	✓ T	(-) CHECK FEE (IF ANY)	(+) AMOUNT OF DEPOSIT	BALANCE

Writing Cecks/Deposit Slips Name_____

Using the information given, write the following checks.

1. Ohio Book Store, $14.75, check #27, October 12, 1984
2. Slim's Gym, $15.00, check #64, January 3, 1985
3. Hong Kong Auto, $62.50, check #83, March 7, 1985
4. Donald D. Quack, M.D., $25.00, check #96, March 15, 1985
5. Goldbricks Furniture, $647.95, check #108, April 1, 1985
6. Mary A. Lamb, $24.07, check #115, April 8, 1985
7. The Athlete's Foot, $32.04, check #124, April 30, 1985
8. Ma & Pa Bell, $47.09, check #139, May 30, 1985
9. Rot N. Foodliner, $47.09, check #139, May 30, 1985
10. I.M. Dunn, Inc., $125.73, check #147, June 6, 1985

Using the information given, write the following deposit slips.

11. cash: $150.00

checks: $ 28.75
242.54
2.92

12. cash: $50.00

checks: $320.00
47.88
1.98
74.95

No. _____ 61-10/620

_____ 19__

PAY TO THE ORDER OF _____ $ _____

_____ DOLLARS

CITY NATIONAL BANK
Abbeville, Alabama

By _____

⑆062000010⑆ 392-147331⑆

No. _____ 61-10/620

_____ 19__

PAY TO THE ORDER OF _____ $ _____

_____ DOLLARS

CITY NATIONAL BANK
Abbeville, Alabama

By _____

⑆062000010⑆ 392-147331⑆

No. _____ 61-10/620

_____ 19__

PAY TO THE ORDER OF _____ $ _____

_____ DOLLARS

CITY NATIONAL BANK
Abbeville, Alabama

By _____

⑆062000010⑆ 392-147331⑆

No. _____ 61-10/620

_____ 19__

PAY TO THE ORDER OF _____ $ _____

_____ DOLLARS

CITY NATIONAL BANK
Abbeville, Alabama

By _____

⑆062000010⑆ 392-147331⑆

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No. _____ 61-10/620

_____ 19__

PAY TO THE ORDER OF _____ $ _____

_____ DOLLARS

CITY NATIONAL BANK
Abbeville, Alabama

By _____

⑆062000010⑆ 392-147331⑆

CHECKING ACCOUNT DEPOSIT TICKET

NAME _____

DATE _____ 19__

This deposit is accepted subject to verification and to the rules and regulations of this Bank.

CITY NATIONAL BANK
Abbeville, Alabama

	DOLLARS	CENTS
CASH		
CHECKS 1		
2		
3		
4		
5		
TOTAL FROM OTHER SIDE		
TOTAL		

LIST CHECKS SINGLY • ENDORSE EACH ITEM

IF MORE THAN [illegible] CHECKS, LIST ON REVERSE SIDE. ENTER TOTAL HERE

FOR BANK'S USE ONLY

ACCOUNT NUMBER

Suggested Teacher Directed Activity

Keeping a checkbook

As an ongoing activity, it is suggested that each student be given his/her own checkbook, complete with a set of checks, a set of deposit slips, and a register. A problem dealing with writing a check and/or making a deposit may be given at the beginning of class each day. A specified amount of time should be set aside to allow each student to calculate the problem and do the necessary work in the checkbook.

Example: Write a check to cover the purchase of a T-shirt at Sportee's on July 14, 1984 for $8.99. (Don't forget to calculate sales tax before you write the check.)

At the end of each month, the teacher should provide a monthly statement to allow each student to reconcile his/her own checkbook.

Suggestions:

1. Pay the students once a week.
2. Teacher may want to collect each day's check/deposit slip to verify work.
3. Forms are provided within this project.
4. Your local bank may provide the necessary materials and a guest speaker should you desire.
5. This activity may be revised for a savings account situation.

CHECKING ACCOUNT STATEMENT

Customer Account Number

Statement Date

#Cashed Checks and other Debits

#Deposit and other Credits

Date	Transaction	Check No.	Checks	Deposits	Balance

HOW TO BALANCE YOUR CHECKING ACCOUNT STATEMENT

BEFORE YOU START

Please check to be sure you have entered in your check book all transactions shown on the front of your statement.

You should have added if they occurred
1. Credits
2. Memo deposit

You should have subtracted if they occurred
1. Automatic savings transfers
2. Service charges
3. Personalized check charges

1. Write here the last balance shown on this statement.	$_____
2. Check the deposits you have made during current period and enter in this space any which have not been credited on this statement.	$_____
3. Total of lines 1 and 2	$_____
4. List in 4a below any checks you have issued which are not returned with this statements and enter your total here.	
5. Subtract line 4 from line 3. This should be your present balance.	$_____

4a.

Check No.	Amount Dollars	Cents

Total to be Entered on 4a $_____

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Career/Food Production Name_____

Food production specialists help in the production, processing, and marketing of farm products. Their role is a major occupation in a world where population growth places an ever-increasing demand for food production. Even in the United States, where the number of farms has decreased, the demand for agriculture specialists continues to increase.

1. The cost of utrazine is $3.00 per liter. How much would 2,188 liters cost?

2. If Charlie Coleman can sell $200,000 worth of farm machinery, he will be awarded a trip to Bermuda. He has sold 3 tractors at $13,947 each, 2 sets of plows at $6,987 each, 4 hay balers at $18,856 each, and 2 combines at $43,942 each. Will he be awarded the trip?

3. Harry Chung has discovered a new sweet corn seed that increases the number of ears of corn per plant from 5 to 8 ears. If a farmer has 4,547 corn plants, how many more ears of corn can he expect from the new seed?

4. Elsie, the prize cow, produced 1,920 kg of milk during the month of Sept. How much milk was produced per day?

5. It takes 53 days to raise a 1.5 kg chicken. If it costs 3¢ a day for food plus 2¢ a day for heat & electricity, how much will it cost to raise a 1.5 kgx chicken? How much will it cost to raise 60 of these chickens?

Job Description

Processor tests, grades, and packages food for transport.

Service technician produces and sells products needed for food production such as seed, fertilizer, machinery and fuel.

Farm owner owns and manages a farm; assists in the operation of the total farm program.

Supply technician assists in research to develop new products and techniques.

Crop production technician tests seeds, soil, machinery, and techniques to improve the efficiency of production programs.

Training

Entry-level jobs are available to high school students in canneries, freezing plants, packing plants, and farms. Higher level opportunities are open to those who have completed two- or four-year agriculture programs available in most state universities.

6. The Conklins' milk check was $3,457. Expenses were $258 for hired help, $324 for electricity, a $467 payment on farm machinery, an $847 feed bill, $450 for gasoline and fuel, and an $85 veterinary bill. How much do they have left from the check?

7. Maria Garcia tests the amount of insecticides present in freshwater fish. In 5 readings, she recorded 215 units of insecticides. What was her average reading?

Career/Food Services Name_____

Food service specialists purchase, prepare, and serve food in cafeterias, restaurants, hospitals, and so on. One of the more recent needs for such services is by airlines. Food service ranks among the first five largest industries in the United States. Purchasing, preparing, and servicing of food are key jobs in this industry.

1. A restaurant manager employs 12 full-time workers at an average of $150/week and 6 part-time workers at an average of $90/week. What is the payroll needed for these people?

2. On a recent flight to Los Angeles, lunch was served to 75 coach passengers and 12 first class passengers. On the return flight, dinner was served to 102 coach passengers and 15 first class passengers. Costs for meals were: $4.25 coach lunch, $5.75 first class lunch, $5.15 coach dinner, and $6.75 first class dinner.

Find:
a) cost of lunch (total)
b) cost of dinner (total)
c) total cost of passenger meals on the round trip flight.

3. A kitchen supervisor estimates that 50 kg of top quality sirloin steak will be needed for Thursday's dinner special. The cost of sirloin steak is $5.40/kg. If the steak is adequate for 120 servings, what is the cost per serving?

Job Descriptions

Kitchen steward supervises dishwashing and workrooms; keeps inventory; requisitions replacement of flatware, glassware, and china.

Flight kitchen manager supervises airline food service; schedules employees and delivery of food and supplies.

Restaurant manager deals with the staff and employees; maintains efficiency and quality in service.

Head waiter supervises the operation of the dining room.

Food technologist tests food to maintain standards.

Training

Food service specialists often receive on-the-job training. Some vocational schools offer preparatory courses in this area. One-year courses in technical training are offered in some post high school programs. Two-year programs are offered by junior and community colleges. Four-year college food service administration programs are also available.

4. This past summer, Suze Onaka, a kitchen steward, placed these monthly orders for new dinnerware settings.

June 33
July 38

a) What was her average monthly order?
b) If the cost was $10.60 for each place setting, how much was spent in July?
c) How much was spent for replacement dinnerware for the entire summer?
d) What was the <u>average</u> monthly cost of the dinnerware?

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Career/Transportation Name _____

Traffic and transportation specialists work for efficient movement of freight and people. All sorts of goods, from vegetables to machinery, move by rail, truck, water, or air. The transportation specialist makes possible the physical distribution system which helps us to achieve the highest standard of living in the world.

1. A station agent sold $1,400 in one-way tickets on Thursday. Each ticket cost $3.50. How many tickets were sold?

2. When it's noon in New York, it is 10 am in Denver. Flight time from Denver to New York is 4 hrs. A plane leaving Denver at 2 pm will arrive in New York at what time?

3. A bus route of 48 km can be covered in how many minutes at an average speed of 60 km/h? How many trips will a driver make in 8 hrs of driving?

4. A truck driver can cover the 2,250-km run from Phoenix to Fort Worth at an average rate of 75 km/h. How long is the trip?

5. A long-distance trucker must keep a mileage record. The odometer at the beginning of a run read 5,246.7 mi. At the end, it read 6,170.4 mi. How long was the run?

Job Description

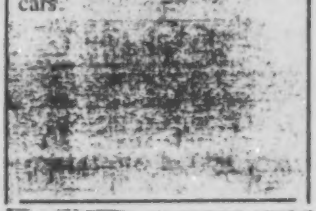
Yardmaster monitors the operation of the computer-controlled yard.

Railroad engineer drives a railroad locomotive.

Terminal manager supervises the loading, unloading, storing, and crating of goods.

Rate clerk prepares rate statements; provides information on rates and charges; audits freight bills.

Freight mover handles the movement of freight cars.



Training

Entry-level jobs are available to capable high school graduates. Sometimes licenses or certificates are required. Those with career goals should pursue a one- or two-year college program in transportation.

6. Airplane mechanics must know ratios. A 3 to 5 gear ratio means a gear revolving 3 times causes another to revolve 5 times. What is meant by a 12 to 5 gear ratio?

7. An airline clerk must weigh passenger baggage. The charge for each pound over the limit is 60¢ a pound. If the limit is 40 lb, how much is charged for 67 lb of luggage?

8. Each day an intercity bus driver makes 4 round trips over a toll bridge. The toll is $2.35 one way. How much is collected in a one week?

9. A locomotive engineer left Syracuse at 10:45 AM and arrived in Albany at 2:15 PM. How long did the trip take?

10. Jesse Johnson wants to mail a 6.6 pound package from East Homer to West Palm Beach. The rates are $1.84 for the first two pounds and $.62 for each additional or part of a pound. He also wants to insure the package for $175. Insurance costs $.65 for each $25 of value. Find the total cost to shop the package.

11. An airline piolot upon take off climbs at a rate of 1070 meters per minute. Find the plane's altitude after a half-hour.

12. As a yard master Mr. Martinez earns $1,600 per month. As a terminal master Ms. Rosen earns $1,450 per month. Compute the yearly difference between their salaries.

Decimal Post Test Name_____

SHOW YOUR WORK

1. Write the word statement nine and one hundred twenty-five ten-thousandths. 1. _____

2. Round to the nearest whole number: 129.432 2. _____

3. Find the sume of 6 + 2.73 + 8.4 + .876 3. _____

4. Find the difference between 12.04 - 1.376 4. _____

5. Find the product of 25.7 x 3.9 5. _____

6. Find the quotient of 3.848 ÷ .16 6. _____

7-10 Estimate to the nearest whole number.

7. 9.83 + 13.015 + 2.4 + .76 + 16.108 + 6.499 7. _____

8. 52.19 - 30.61 8. _____

9. 13.57 x 10.24 9. _____

10. 59.51 ÷ 14.91 10. _____

11. Mary worked 39.5 hours last week at $3.50 per hour. Her deductions were Social Security - $15.75, federal income tax - $24.67, and state income tax - $8.39. What was her net pay?

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Fractions

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Fractions Pretest Name _____

Show your work

1. Simplify $\frac{12}{20}$ 1. _____

2. Find the greatest common factor (GCF) of 16 and 24 2. _____

3. Find the least common denominator (LDC) for 1/4 and 3/10 3. _____

4. List all the factors for 12 4. _____

5. Is 21 a prime or composite number? 5. _____

6. Is 420 divisible by:
   a. 2? 6.a. _____
   b. 3? b. _____
   c. 5? c. _____
   d. 6? d. _____
   e. 9? e. _____
   f. 10? f. _____

7. Write the prime factorization for 60 7. _____

8. Change 2 1/4 to an improper fraction 8. _____

9. Change $\frac{18}{5}$ to a mixed numeral 9. _____

Compute the sum and simplify:

10. $6\frac{5}{7} + 2\frac{4}{7}$ 10. _____

11. $8\frac{1}{3} + 2\frac{1}{2}$ 11. _____

Compute the difference and simplify:

12. $9\frac{3}{4} - 7\frac{5}{8}$ 12. _____

13. $7\frac{1}{5} - 3\frac{2}{5}$ 13. _____

Compute the product and simplify:

14. $2/5 \times 15/16 =$ 14. _____

15. $2\frac{1}{4} \times 1\frac{2}{3} =$ 15. _____

Compute the quotient and simplify:

16. $3/8 \div 15/16 =$ 16. _____

Express as a terminating or repeating decimal:

17. 2/3 17. _____

18. 4/5 18. _____

19. Express .35 as a fraction in simplest form 19. _____

20. A recipe calls for 1/2 cup of milk and 1/4 cup of water. If the recipe is doubled, what is the total amount of liquid needed? 20. _____

GCF Game

Instructions

Needed: Pair of Dice
Game board reproduced on overhead transparency
Overhead projector

Procedure: Teacher rolls dice and adds the numbers to provide a GCF. the class is divided into two teams with captains to provide answers after each roll. The first team (A) locates a fraction which has that GCF; the teacher puts an X over that square. Team A scores no points.

Teacher rolls dice and gives the next GCF. If team B can find a fraction ADJACENT to team A's, they can score a point. If not, team A locates any fraction with the given GCF. In either case, the teacher marks their choice with an O.

Play continues, alternately, with points scored only when a fraction with the oposite team's X or O on it. More than 1 point can be scored if a team's choice is adjacent to more than 1 of the opponent's fractions.

If a team answers incorrectly or cannot answer within a given time limit, their turn is forfeited. Deduct points for more than 3 passes.

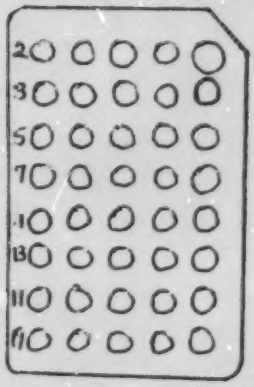
Game ends at a predetermined time or point total.

GCF Game Board

$\frac{8}{12}$	$\frac{6}{24}$	$\frac{10}{20}$	$\frac{9}{27}$	$\frac{12}{16}$	$\frac{4}{32}$	$\frac{33}{55}$	$\frac{21}{35}$	$\frac{30}{36}$	$\frac{24}{40}$
$\frac{15}{80}$	$\frac{48}{54}$	$\frac{75}{110}$	$\frac{18}{63}$	$\frac{24}{36}$	$\frac{16}{30}$	$\frac{9}{96}$	$\frac{8}{140}$	$\frac{18}{60}$	$\frac{35}{98}$
$\frac{12}{144}$	$\frac{8}{32}$	$\frac{21}{48}$	$\frac{27}{72}$	$\frac{35}{50}$	$\frac{14}{21}$	$\frac{24}{64}$	$\frac{2}{6}$	$\frac{3}{12}$	$\frac{4}{10}$
$\frac{4}{64}$	$\frac{9}{12}$	$\frac{54}{6}$	$\frac{40}{168}$	$\frac{130}{20}$	$\frac{48}{78}$	$\frac{99}{22}$	$\frac{24}{60}$	$\frac{4}{24}$	$\frac{10}{15}$
$\frac{100}{10}$	$\frac{24}{48}$	$\frac{9}{15}$	$\frac{77}{66}$	$\frac{28}{49}$	$\frac{11}{99}$	$\frac{12}{24}$	$\frac{140}{90}$	$\frac{21}{27}$	$\frac{48}{12}$

Greatest Common Factor: Methods

Prepare a card for common numbers with holes punched for each prime factor, using the format of the master shown. Show the factors by punching as many holes in each row as the number has factors. For example, the 26 card would have the first 2 spaces in the 2 row punchd and the first 2 spaces in the 3 row punched.

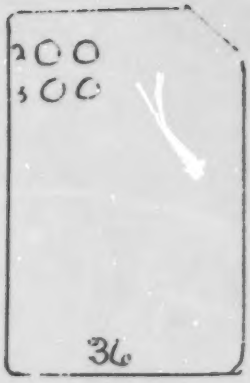


3x5 card

The GCF of two numbers is then determined by placing the numbers' card on top of each other and noting the number of holes which line up. This procedure can conveniently be shown on an overhead projector.

Students may make their own cards in groups to solve given problems or identify the composite number when its factor card is shown on the overhead projector.

Also the LCM of two number equals the product of the number divided by the GCF; therefore the students can practice LCM after finding the GCF.



Calculator: Mixed Numbers Name _____

1.a. Change $\frac{149}{16}$ to a mixed number the usual way (by long division):

Answer: _____

b. Change $\frac{125}{8}$ to a mixed number in the same way.

Answer: _____

2. Here's how to use a calculator to change $\frac{149}{16}$ to a mixed number.

Step 1: Key in 149 ÷ 16 = _____

Step 2: Write down the number to the left of the decimal point.

_____

Step 3: Subtract the number in step 2 from the answer that's on the calculator.

_____

Step 4: Multiply by the divisor: 16 x .3125 =

_____

Step 5: Result of step 4 = numerator of final fraction. Result of step 2 = whole number.

Answer = _____

3. Follow the same steps to change $\frac{125}{8}$ to a mixed number.

Step 1: Key in _____ ÷ 8 = _____

Step 2: Number to the left of the decimal point = _____

Step 3: Subtract the number in step 2 from step 1's answer

_____

Step 4: Multiply by the divisor: 8 x _____ = _____

Step 5: Final answer: _____

4. Find the mixed number for $\frac{426}{125}$

5. Find the mixed number for $\frac{477}{64}$

Bob Squad: Fraction X Name_____

Class or small-group work

1. Breathing at a rate of 17 breaths minute, the average person inhales 3/5 liter of air on each breath.

   How many liters of air are inhaled in:

   1 minute: _____ (improper fraction)
   1 hour: _____ (simplest form)
   1 day: _____
   1 year: _____

2. One-fifth of the air we breathe is oxygen. In one minute, the average person inhales how many liters of oxygen? _____

3. The body uses only one twentieth of all air that one inhales. Using your answers from #1, how many liters of air are used in:

   1 minute? _____
   1 hour? _____
   1 year? _____

4. The amount of blood in your body is one-eleventh of your total body mass. Find the amount of blood in a person who weighs: 55 kilograms:_____

   50 kg: _____ (mixed number)

   68 kg: _____ (mixed number)

5. Four-fifths of your blood is water. Using your anwers to #4, how much water in the person who weighs:

   55 kg:_____ 50 kg:_____ 68 kg:_____

6. For every heartbeat 3/50 liters of blood goes through the heart. If you breathe 17 times per minute, how many liters of blood passes the heart in one minute?

Bob Squad: Fractions X (continued) Name_____

1. People who jog regularly have lower pulses. If a person breathes at a rate of 10/minutes, how many liters are inhaled in:

   1 minute: _____ 1 hour: _____

2. How much oxygen does a jogger inhale in 1 hour? _____

3. How much of the air tat the jogger inhaled in one hour gets used?

   _____

4. There are 2 1/5 pounds in one kilogram. How many pounds are in:

   5 kg:_____ 50 kg:_____ 68 kg:_____ 4 1/2 kg:_____

5. If the amount of blood is 1/11 of any body mass, how much blood is in 120 pounds?_____ 121 pounds_____ 150 pounds _____

6.a. How many liters of blood passes through the jogger's heart in:

   1 minute?:_____ (use 10 breaths per minute)

   b. Does <u>more</u> or <u>less</u> blood pass through the jogger's heart in 1 minute? _____

Find the Majority Name_____

In voting, a simple majority is 1/2 the total number of votes plus one. A 2/3 majority is 2/3 of the total number. If the majority is a mixed number, round it to the next whole number.

Find the majority.

1. Hans Swan needed a 2/3 majority to be elected sheriff. 4,200 people voted. How many votes did he need? _____

2. Some states change their laws if a 4/5 majority of the voters approve. If New York State has 8 million persons voting on election day, how many millions will be required to change the law? _____

3. The U.S. requires the approval of a 2/3 majority of the states to amend the Constitution. How many states are needed to make the 2/3 majority? _____

4. There are 75 members belonging to Chris's Calorie Class. To change the by laws of the club, a 3/4 majority of the members present must approve. How many members are needed to make the 3/4 majority? _____

5. What is the simple majority if there are 186 teachers voting in the Townley School election? _____

Calculator Fractions Name _____

1a. Multiply 1/2 x 3/4 by entering the numbers in the order given. Fill in the correct operations in the boxes.

1 2 3 4 = _____

b. Repeat, using this order, with the correct operations:

1 3 2 4 = _____

c. Find two other orders and the operations that give the correct answer:

_____ = _____

_____ = _____

2. Compute with calculator:

a. 5/32 x 2/25 = _____ Fill in: 5 32 2 25 = _____

5 2 32 25 = _____

b. 7/25 x 3/16 = _____ (Use only order)

c. 21/80 x 11/75 = _____

d. 13/50 x 3/16 = _____

3. Write a multiplication problem that you could solve with the following order of numbers and operations.

3 7 25 16 =

Buying Food

Name_____

Price List

Groceries - Canned Goods

corn	49¢ a can
flour - 5lb. for	85¢
peaches	67¢ a can
peas	39¢ a can
pineapple	79¢ a can
soap	39¢ a bar
soups - 2 cans for	65¢
string beans	49¢ a can
sugar - 5lb. for	$1.75
tomatoes - 2 cans for	69¢
tomato juice	81¢ a can

Meats and Fish

Chicken	78¢ a lb.
Flounder	2.39 a lb.
Haddock	2.18 a lb.
Lamb	2.59 a lb.
Rib Roast	2.78 a lb.
Sirloin	2.98 a lb.
Smoked ham	1.99 a lb.
Veal	6.99 a lb.

Dairy

Butter	$1.95 a lb.
Eggs	.99 a doz.
Milk	.91 a half gal.

Bakery

Assorted cup cakes -	$1.99 a doz.
Bread -	59¢ a loaf
Rolls -	$1.25 a doz.

Fruit and Produce

Apples	3lb. for	$1.59
Beets		.69¢ a bunch
Carrots		.33¢ a bunch
Celery		.69¢ a bunch
Grapefruit	3 for	1.00
Grapes		1.29 a pound
Lemons	6 for	.89¢
Onions	3 lbs. for	.99¢
Peaches		.59¢ a lb.
Pears		.49¢ a lb.
Potatoes	5 lbs. for	1.49
Tomatoes		1.29 a lb.

Using the above price list, find the cost of each of the following orders:

1 doz. eggs
1/2 doz. rolls
3 cans peas
1 can pineapple
3 bars soap

_____

2 cans corn
2 lbs. sirloin
2 1/2 gal. milk
5 lb. potatoes
1 doz. oranges

_____

2 1/4 lb. flounder
5 lbs. flour
2 bunches beets
6 cans soup

_____

3 cans string beans
10 lb. sugar
3 lb. lamb
1/2 doz. cup cakes
1 can peaches
2 bunches carrots

_____

4 1/2 lb. chicken
2 bunches celery
2 lb. tomatoes
4 cans soup
2 doz. eggs
3 lb. apples

_____

3 cans tomato juice
4 grapefruit
2 loaves bread
3½ lb. rib roast
2 lb. grapes
2 bars soap

_____

2 3/4 lb. ham
2 lb. butter
1/2 doz. cup cakes
4 bunches beets
8 oranges
10 lb. flour

_____

1/2 gal. milk
15 lb. sugar
1 1/4 lb. veal
1 1/2 lb. haddock
2 lb. pears
5 lb. potatoes
3 lb. onions
3 doz. eggs

_____

2 cans tomatoes
9 lemons
2 1/4 lb. sirloin
3 cup cakes
1 can soup
2 cans pineapple
1 lb. butter

_____

5 lb. sugar
3 lb. chicken
2 1/2 lb. sirloin
1 doz. rolls
3 cans corn
1 can soup

_____

2 lb. tomatoes
10 lb. potatoes
3 1/2 lb. lamb
2 bunches carrots
1 loaf bread
1 1/2 gal. milk

_____

4 1/4 lb. haddock
3 lb. onions
1/2 doz. oranges
3 lb. apples
2 cans pineapple
9 cup cakes
6 rolls

KITCHEN PROBLEMS

Equivalents

3 teaspoons = 1 tablespoon
2 tablespoons = 1 ounce
16 tablespoons = 1 cup
2 cups = 1 pint
8 tablespppns = 1 gill

1. Change:

a. To tablespoons: 6 teaspoons = _____; 1/4 cup = _____ 1 pint = _____

b. To teaspoons: 5 tablespoons = _____; 2 oz. = _____ 1/2 cup = _____

c. To tablespoons: 3/4 cup = _____ 10 teaspoons = _____ 3 oz. = _____

d. To cups: 1 quart = _____ 20 tablespoons = _____ 12 oz. = _____

e. To ounces: 4 tablespoons = _____ 1/2 cup = _____ 18 teaspoons = _____

f. What part of a tablespoon is: 2 teaspoons? _____
1 teaspoon? _____
1/2 teaspoon _____

g. What part of a cup is: 4 tablespoons? _____
12 teaspoons? _____
3 oz. _____

h. What part of an ounce is: 1 tablespoon? _____
2 teaspoons? _____
5 teaspoons? _____

i. If a recipe calls for 1/2 cup of sugar, how many tablespoons could be used? _____

j. How many tablespoons of baking powder are equivalent to 9 teaspoons? _____

Time Table for Roasting Meats

Whole tenderloin, 30 minutes per lb.
Cured ham, 18 minutes per lb.
Rump beef, 32 minutes per lb.
Leg of veal, 25 minutes per lb.
Leg of lamb, 35 minutes per lb.
Rack of ribs, veal, 40 minutes per lb.

2. How much time should it take to roast:

a. A 12-lb. cured ham?
b. A 5-lb. leg of lamb?
c. 4 1/2 lb. of whole tenderloin?
d. 6 1/4 lb. of rump beef?
e. A 3-lb. rack of ribs of veal?
f. 7 3/4 lb. of leg of veal?

2. _____
_____
_____
_____
_____
_____

Recipes

3a. The following recipe will make 12 muffins.

1/3 cup butter	_____
1/3 cup sugar	_____
1 egg	_____
2/3 cup milk	_____
2 cups flour	_____
3 teaspoons baking powder	_____
1/2 teaspoon salt	_____

Write next to each ingredient in the above recipe the amount needed to make 36 muffins.

3b. The following recipe will make 8 cup cakes.

1/2 cup shortening	_____
1 1/2 cups sugar	_____
2 eggs	_____
4 teaspoons baking powder	_____
3/4 cup milk	_____
1 teaspoon vanilla	_____

Write next to each ingredient in the above recipe the amount needed to make 16 cup cakes.

Changing a Recipe Name_____

Spaghetti/4 servings

Brown in a heavy pot
- 1/2 pound sausage
- 1/3 pound hamburger
- 1/4 cup chopped onion

Add
- 3 ounces tomato paste
- 8 ounces tomato sauce
- 16 ounces canned whole tomatoes
- 1 teaspoon sugar
- 1 1/2 teaspoons salt
- 1/2 teaspoon basil
- 2 teaspoons oregano

Simmer 2 hours. Serve over 1 pound of boiled spaghetti.

The Franklins want only 2 servings (no leftovers!). How much of each ingredient will they need?

sausage	_____
hamburger	_____
onion	_____
tomato paste	_____
tomato sauce	_____
whole tomatoes	_____
sugar	_____
salt	_____
basil	_____
oregano	_____

The DeBlasios want enough for 10 servings (there can be left overs!) What would be a good way to do this? How much of each ingredient will they need?

sausage	_____
hamburger	_____
onion	_____
tomato paste	_____
tomato sauce	_____
whole tomatoes	_____
sugar	_____
salt	_____
basil	_____
oregano	_____

Career/Data Processing Name_____

Computer technology has countless opportunities for data processing specialists. New uses and techniques are still being found for computers. This relatively new area is important in the business world and in science and industry as well.

1. Magnetic tape is stored in reels that are 2.8 cm wide. A librarian for a large company is planning a new facility that will contain 18 shelves, each 9 m long. How many reels of magnetic tape can be stored in this room?

2. LaVern Jackson, a systems analyst for a bank, prepares a budget to operate her program. She supervises 12 employees whose salaries follow: 2 who earn each $24,000, 4 who each earn $20,000, 4 who each earn $16,000, and 2 who each earn $12,000. Her salary is $32,000. Rented equipment totals $36,000 per year; materials and supplies total $17,800; utilities are estimated at $24,000. What is the total annual budget?

3. The operating budget of a certain data processing machine is $36,000 per year, based on 16 h/d (hours pr day) for 250 working days per year.

a. What is the operating cost per hour for this machine?

b. If management can increase the operating time to 24 h/d for 275 days per year, by what percent will efficiency increase?

4. The low resolution graphics screen on an Apple Computer has dimensions of 24 by 40 characters. How many characters will it take to fill the screen?

5. About 3/8 of all design engineers, persons who work on the research and development of computers, are self-employed. Out of 12,496 engineers, how many are slef-employed?

6. The computer operator of a local trucking company schedules jobs for the computer. On Friday, she scheduled jobs of 73 min, 98 min, 125 min, and 52 min. How much work time was left if she likes to log 8 hour work days for maximum efficiency? What was the average time of each job?

7. Bill Canton, a data entry clerk, key punches at a speed of 200 strokes per minute. At that speed how long will it take him to punch 1,500 cards with 50 strokes per card?

Tape librarian mounts and retrieves magnetic tapes; supervises the storage of tapes; logs tapes to users.

Systems analyst designs and implements computer applications with full responsibility for a project.

System programmer specializes in computer software including monitors, compilers, and control programs; provides technical assistance to other programmers.

Quality assurance technician tests individual components of complex electronic circuitry before final assembly.

Programmer writes new programs and modifies existing programs using suitable computer languages.

Training

Many Data Processing Technicians receive training in high school programs. Two-year programs are offered by most community colleges. Check the reliability of private schools advertising such programs. While many jobs in this area are routine, others require advanced training in computer technology.

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8. Barbara Richards worked 5 1/2 hours overtime a time-and-a-half, debugging a computer program. If her regular salary is $9.85 per hour, how much overtime pay did she receive? Round the answer to the nearest cent.

9. The Computer Think Tank, a company that serves the computer needs of businesses and government, replaced a computer. The old computer performed 500,000 calculations per second. The new computer can do 1,000,000,000 calculations per second. What percent increase was this?

10. Mr. Rhoades, a computer programmer, spent from 8:00 am to 4:45 pm on Monday and Tuesday writing a set of instructions for the payroll department at the Revere Life Insurance Co. He took an hour for lunch on both days. If he is paid $10.59 per hour, how much did he earn?

11. Some high speed printers can print 1,000 lines per minute. If there are 50 lines on each page, how long will it take to print a 672 page report?

12. How much more would it cost to rent a computer for 6 years at a rate of $5,000/mo, than it would be to purchase the computer for $150,000?

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Career/Textiles

Name _____

Synthetic fibers and combinations of synthetic and natural fibers have created limitless opportunities in the textile industry. Major work areas are (1) research and development, (2) quality control and production, and (3) customr service and sales. In these areas, the textile specialist uses a high degree of knowledge to create new markets.

Solve these problems.

1. Carmine tested three cloth samples and found that the strengths were: Sample A, 0.401 units; Sample B, 40/100 units; and Sample C, 420 per thousand units. Which sample has the greatest strength?

2. The strength of a certain material is 0.2846 units. Using a new manufacturing technique, the material will become 2 1/2 times stronger. What will be the nw strength?

3. Connie tested a material sample and found 219 strands per centimeter. Margaret tested the same material and found 146 strands per centimeter. What was the difference in their readings?

4. The measured strand readings of the same material from different companies were 171 sts/cm, 170.6 sts/cm, and 172 1/4 sts/cm. What was the average strand reading?

5. If one machine at the Fashion Fabrics Company produces 8 3/4 m of material per minute, how many meters are produced in one hour?

6. The daily production readings for the Chang Fabric Company were 783.72 m of red material, 529.3 m green, 62,579 m gold, 1,004.07 m white, and 43.26 m black. What was the total production?

7. Machine A produces material at the rate of 345.2 m/h; Machine B, 456 1/2 m/h; and Machine C, 275.38 m/h. What is the total amount of material produced in an 8-h day?

8. Emad can produce 32.5 m of material in one hour and is paid $9.10/h. What is the rate per meter of material produced?

Job D

Fabric salesperson measures and cuts fabric to customer's specifications; calculates the cost of orders; advises customers on care and use of fabric.

General laboratory technician tests cloth samples to determine strengths and weaknesses; runs tests to determine characteristics of various fibers.

Production control technician gathers data and makes calculations to keep materials moving evenly through the production operations.

Evenness tester technician operates testing equipment and analyzes the results to maintain quality control.

Weaver winds warp yarns on metal spindles and weaves cloth.

Training

Entry-level jobs may be available to high school graduates. Many two- and four-year colleges offer programs. High school graduates without advanced training will find it difficult to progress upward.

9. Ella can produce 23.6 m of material in one hour and is paid at the rate of $0.24/m. How much does she earn in a 40-h week?

10. Karen can produce 17.5 m of material per hour and is paid $4.45/h. John can package 135 m of material per hour and is paid $4.85/h. How much does it cost for them to produce and package one meter of material?

Fractions Post Test Name _____

Show your work

1. Simplofy $\frac{36}{45}$ 1. _____

2. Find the greatest common factor (GCF) of 30 and 36 2. _____

3. Find the least common denominator (LCD) for 1/6 and 2/9 3. _____

4. List all the factors for 40 4. _____

5. Is 27 a prime or composite number? 5. _____

6. Is 6,048 divisible by:
   a. 2? 6a. _____
   b. 3? b. _____
   c. 5? c. _____
   d. 6? d. _____
   e. 9? e. _____
   f. 10? f. _____

7. Write the prime factorization for 84. 7. _____

8. Change 9 3/5 to an improper fraction 8. _____

9. Change 27/4 to a mixed numeral 9. _____

10. $4\ 7/8 + 2\ 3/8$ 10. _____

11. $5\ 5/6 + 2\ 3/8$ 11. _____

Compute the difference and simplify:

12. $9\ 5/6 - 9\ 1/4$ 12. _____

13. $8\ 1/4 - 7\ 3/5$ 13. _____

Compute the product and simplify:

14. $\frac{16}{21} \times \frac{7}{24}$ 14. _____

15. $2\ 3/4 \times 2\ 2/3$ 15. _____

Compute the quotient and simplify:

16. $5\ 1/4 \div 3\ 3/8$ 16. _____

Express as a terminating or repeating decimal:

17. $\frac{4}{11}$ 17. _____

18. $\frac{3}{8}$ 18. _____

19. Express $.\dot{0}4$ as a fraction in simplest form. 19. _____

20. Joe has a length of board 10 feet long. He needs to cut 2 lengths of 3 3/4 ft. each from it. How much board will be left over? 20. _____

Ratio and Proportion

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Ratios Name_____

Find each ratio (write answer in simplified form).

A. A volleyball team won 15 games and lost 3. Write the ratio 2 ways:

1. wins to losses
2. losses to wins
3. wins to total
4. total to losses

B. Kleena can clean her house in 8 hours. What part can she clean in the given number of hours?

1. 1 2. 4 3. 5 4. 6 5. X

C. A fruit basket contains 8 apples, 20 oranges, 5 bananas and 2 peaches. Find each ratio:

1. bananas to oranges
2. peaches to apples
3. apples to total
4. apples to bananas
5. peaches to bananas
6. peaches to total
7. oranges to peaches

D. A pipe can fill a tank in 10 hours. What part of the tank can be filled in the given number of hours?

1. 2 2. 4 3. 5 4. 9 5. N

E. A hockey team won 14 games and lost 6. Write the ratio 2 ways:

1. wins to total
2. losses to wins
3. total to losses
4. wins to losses
5. losses to total

F. Find each batting average (Divide and round your answer to the nearest thousandth).

1. Harry Hitter - 108 hits in 400 times at bat.
2. Samuel Slugger - 106 hits in 350 times at bat.
3. Wally Whiffer - 55 hits in 360 times at bat.
4. Horatio Homer - 226 hits in 532 times at bat.

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How the Dollar Has Shrunk In the 20th Century

AS THE LONGEST, most vicious spiral of inflation in modern U.S. history winds down, many experts envision a period of price stability ahead.

But experience teaches a different lesson: Except during times of economic depression, the erosion of the dollar's buying power is a constant process.

Even during the 1950s, a period of relatively low inflation, the purchasing muscle of the dollar shrank 20 percent. From 1971 to 1981, when prices rose 125 percent, a far greater loss of buying power occurred.

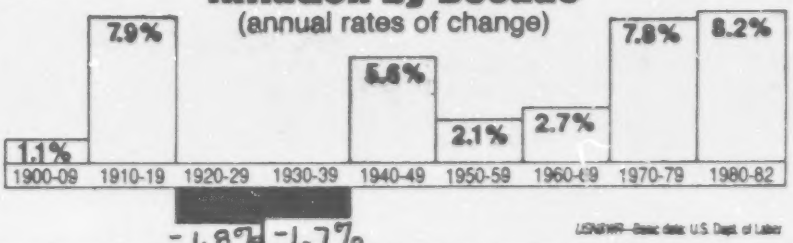
And in the future? If inflation can be held to 4 percent each year until 2000, the value of the 1900 dollar—just 9 cents today—still will shrivel to a mere 4 pennies.

Buying Power of 1900 Dollar

(as deflated by the consumer price index)

Inflation by Decade

(annual rates of change)



LENS/WP—Basic data: U.S. Dept. of Labor

Using Proportions with Money Problems (Economic Bar Graph)

Name _____

1. Sample Problem: If a house was worth $5,000 in 1900, how much would it be worth today?

   Solution: Value today "is to" $5,000.00
   as
   Value of dollar today "is to" 1900 $1.00

   $$\frac{\text{Value today}}{\$5{,}000.00} = \frac{.09}{1}$$

   Value today = $450.00

2. If a house cost $5,000.00 in 1900, how much was it worth in 1930?

3. How much was the same house worth in 1960?

4. In 1900, a family might have spent $10.00 on a week's groceries.

   a. How much would the $10.00 be worth today?

   b. Name an item that you might get for that amount of money today.

5. In 1900, Grandpa gave Junior 1 penny to buy candy at the drugstore that was priced at 2 for a penny.

   a. How many pieces of candy could Junior buy?

   b. How much was that same penny worth in 1930?

   c. How many pieces of candy could Junior have bought in 1930?

   d. How much was the penny worth in 1960?

   e. How many pieces of candy could Junior have gotten in 1960?

   f. How much was the peeny worth in 1982?

   e. Could Junior (then 90 years old....) have gotten any candy?

6. A piece of land in 1900 cost $50,000.00

   a. How much was that $50,000.00 worth in 1982?

   b. What fractional part of the land would the money buy in 1982?

Percents

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Percent Pre-Test

Name _____

1. Write .625 as a percent. 1. _____

2. Write 13/20 as a percent. 2. _____

3. Change 9% to a decimal. 3. _____

4. Change 60% to fraction in lowest terms. 4. _____

For 5 - 12 SHOW ALL WORK!!!

5. Find 14% of 62

6. What percent of 64 is 16?

7. 15% of what number is 225?

8. A $250 suit is on sale for 40% off. Find the sale price.

9. In Cortland County there is a 7% sales tax. Find the total cost of a $12.00 shirt.

10. Fred May Pontiac pays his salesmen a 6% commission on each car they sell. How much will a salesman earn on a $8,450 sale?

11. Richie took Susie out for dinner. Their total dinner bill was $35.00. If Richie leaves a 15% tip for the waiter, how large of a tip should Richie leave?

12. Last year Mr. Sampson's yearly salary was $16,000. This year Mr. Sampson will earn $16,400. What percent raise did he receive?

Name _____

Play the Percentages

1. Complete the shot chart below.

	Shots taken	Shots made	Ratio	Shotting percentage
Beth	9	4	____	_____
Joe	12	8	____	_____
Heather	6	_____	____	17
Chris	7	_____	3:7	_____
Brett	_____	7	____	_____
	_____	_____	____	_____

2. Mary made 49 of 58 foul shots. What is her foul-shooting percentage?

3. Luke made 60% of his shots. If he took 20 shots, how many did he make?

4. Determine the winning percentage of the teams below.

	Won	Lost	Ratio	Winning percentage
Terrors	71	13	____	_____
Eagles	67	17	____	_____
Lions	60	24	____	_____
Huskies	45	29	____	_____
Bucks	40	44	____	_____

Bod Squad: Percents

Name _____

Skeletal System of the Body - Number of Bones

face	14	collarbone	2	hips	2
cranium	8	shoulder	2	legs	8
ear	6	arms	6	ankles	14
throat	1	wrists	16	feet	10
spinal cord	26	palms	10	toes	28
chest	25	fingers	28		

Class or small group work

1. Find the total number of bones:

2. Find the total number of bones in the legs: _____ (from hips down)

3. Find the percent of bones which are in the legs: _____

4. Find the total number of bones in the head: _____

5. Find the percent of boens in the head: _____

6. a. Find the total bones in your hands: _____

   b. Of those _____ are in the fingers.

   c. Find the percent of bones in the hands which are finger bones: _____

7. In a man, 40% of body mass is muscle and in a woman, 30% is muscle.
   How much mass is muscle if:
   a. Ed weighs 75 Kg? _____
   b. Joyce weighs 48 Kg. _____

1. _____

2. Find the total number of bones in the arms (beginning with shoulders): _____

3. Find the percent of bones in the arms: _____

4. Find the total number of bones in the feet (with toes): _____

5. Find the percent of bones in the feet: _____

6. a. Find total number of bones in ONE leg (from hip down): _____

   b. Of those, how many are in the ankle? _____ (not 14!)

   c. Find the percent of bones in ONE leg which are ankle bones: _____

7. How much mass is muscle if: a. John weighs 63 Kg? _____
   b. Jim weight 94 Kg? _____
   c. Becky weighs 51 Kg? _____
   d. Carol weighs 40 Kg? _____

Percents/Budgeting Name_____

Mary and Paul Only were trying to find out where their money goes. They decided to figure out what percent of their income they spend on each budget item. Find each answer.

1. "My net salary is $638 a month and yours is $602 a month," said Mary. "Our total take-home pay is _____ a month."

2. "We spend $310.00 a month on rent. That's _____ percent of our total income," said Paul.

3. "Don't forget our car payment. It's $155.00 a month," said Mary. That's _____ percent of our total income."

4. "We spend $124.00 for gasoline and parking each month. That's _____ percent of our income," said Paul.

5. Mary added, "$248 a month goes for food. That is _____ percent of our income."

6. "I think I'll sign up for that medical insurance policy at work. It's $6.20 a month and only _____ percent of our income. It might save us money later," said Mary.

7. "If we saved $112.00 a month that would be _____ percent of our income," said Paul. "At the end of the year we will have enough for new furniture."

8. "That leaves us with $_____ for things like movies, clothes and entertainment," said Mary.

Discounts Name _____

The RUG Furniture Company gives an 8% discount to people who pay cash for what they buy at the store instead of charging it.

Find the amount that each family could save by paying cash instead of charging the following items of furniture bought at The Rug Company.

1. Smith

dining room set	$920.00
room divider	360.00
Total:	_____
Amount Saved:	_____

2. Brown

hide-a-bed	$740.00
chair	174.00
coffee table	139.50
Total :	_____
Amount Saved:	_____

5. DeBlasio

bedroom set	$650.00
mattress	89.95
box springs	99.95
night table	$100.00
Total:	_____
Amount Saved:	_____

Name _____

Set the Sale Price

Special Sale!

From _____ to _____% off

1. 35-mm Camera
Was $17[illegible].00
Save _____%
Now $_____

2. Calculator
Was $30.00
Save _____%
Now $ _____

3. TV
Regular price $359.00
_____% off
Sale price $ _____

4. Binoculars
Was $209.00
Save _____%
Now $ _____

5. Telescope
Was $79.
_____% off
Now $_____

6. Microcomputer
Regular price $999.00
Sale price $_____%
Save _____%

7. Stereo
Regular price $550.00
_____% saved
Now $_____

8. Stereo/Radio
Was $100.00
Save _____%
Sale price $_____

9. Digital Clock
Was $74.99
Save _____%
Sale price $_____

10. TV/Stereo
Regular price $1300
Sale price $_____
_____% off

Directions

1. For each item in the window (1-10), roll the die to determine the percent off the regular price.
2. Determine the sale price for the items.
3. Complete the sale banner, indicating the range of your percents of discounts.

Sales Tax(1)

Worksheets can be used for sales tax, along with a map so students can see the progress of the trip. Related map skills and money problems may also be applied.

On their vacation trip, the Mager family found that the percent of sales tax changed from state to state as they went from Washington, D.C. to Boston, Massachusetts.

Complete the chart to find how much they paid in each city for sales tax on their purchases.

City	% of Sales Tax	Amount of Purchase	Sales Tax Paid
Boston, Mass	3%	$160.00	
Providence, RI	5%	46.00	
New York, NY	7%	190.00	
Philadelphia, PA	6%	65.95	
Baltimore, MD	4%	42.50	
Washington, D.C.	4½%	102.00	

The Adams family traveled through the southwestern part of the United States. They also found that the sales tax rate differed from state to state.

Complete the chart to find how much they paid in each city for sales tax on their purchases.

City	% of Sales Tax	Amount of Purchase	Sales Tax Paid
Omaha, NE	3%	$ 36.70	
Denver, CO	6%	180.00	
Salt Lake City, VT	4½%	200.00	
Albuquerque, NM	4%	42.80	
San Antonio, TX	4½%	35.90	
Houston, TX	5%	72.75	

$\underline{\text{Stereo Sale}}$ Name _____

Mike Jackson's stereo has twirled its last disc, and he is in the market for a new one. His friend, B. George, is trying to help him shop.

1. "I just found out that the $320 stereo I like is now 25% off," exclaimed Mike." That will be _____ less I have to pay!"

2. "So your cost will be _____," calculated B. George.

3. Mike figured; "The wires I need are 20% off the regular price of $1.85 each. So I'll save _____ on each one.

4. "Ok," fired back B. George with lightning speed," That means you will pay _____ for each. How many do you need?"

5. "I need six," answered Mike, "but I like to have two extra. So I will pay a total of _____ for all eight."

6. "Wow, these $5.00 tapes are 30% off right now," noted B. George. "You could save _____ on each."

7. "Let's see, if I buy 6," Mike thought out loud, "I would pay _____ for each one and _____ for all 6."

8. "So how much have you spent, Bid Spender?" "Asked B. George.

9. "My total for the stereo, wires, and tapes is _____", Mike said.

10. "Let's figure the sales tax on that amount at 8%," B. George continued. "You will pay the state _____.

11. "So I have just shot a grand total of _____," moanded Mike Jackson. "It is a good thing my last tour did so well..!

Play the Consumer Game

Directions: Construct game board on 16" x 16" oak tag.

16 Fast food family lunch, $7.50	**17** Go back 4 spaces	**18** Buy new ice skates, $34.95	**19** Transfer $10 from checking to savings	**STOP** Balances Savings_____ Checking_____	**1 START** Buy a skateboard, $16.99
15 Tennis racket sale Reg. $27.50 20% off Now _____					**2** SALE 10% off ten-speed bike Regular price $175.00
14 Buy Dad a present, $10.00	**DIRECTIONS** 1. Roll the die to move around the game board. 2. Each time you land on a space, make the purchase or deposit stated. 3. Record the purchase or deposit and new balance in the savings or checking book account below. 4. Remember to transfer money from savings to checking if you run out of checking funds. 5. Make sure your checking and savings account balances are accurate. 6. When you pass or land on "STOP," record the current balances.				**3** Tennis balls, 3 for $5.99
13 **BONUS** Add 20% of your savings balance to your savings					**4** Go to movies, $3.00
12 Moped sale Pay $178.00					**5** Buy a new basketball, $15.00
11 Add your $1.00 allowance to your checking account	**10** Move ahead 2 spaces	**9** Library fine and parking ticket. Total $11.00	**8** **BONUS** $15.00 for your savings account	**7** **RECORD RIOT** Buy 2 albums for $11.99	**6** Go back to start

Play the Consumer Game

Name _____

Savings Account Balance

Checking Account Balance

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Career/Accounting

Name _____

Accounting specialists are involved in the mainstream of all business and economic life. Our nation's economy has created an increasing demand for expert accounting controls. Many businesses require the services of a trained accountant to oversee their operations.

1. Paula Peyton, a tax accountant, prepares state tax returns using the table below:
If the amount on line 16 is :

Over	But not Over		Of excess Over
Less than $2,500		$0	
2,500	4,000	$60 + 4%	2,500
4,000	6,000	140 + 5%	4,000
6,000	10,000	240 + 6%	6,000
10,000	10,000	480 + 7%	10,000

Find the tax one each amount.

a. $2,300

b. $5,300

c. $7,400

d. $14,200

2. An accountant is asked to determind his client's net worth, based on the information found on this balance sheet. (Total Assets - Total Liabilities = Net Worth). Find the net worth of this client.

ASSETS		LIABILITIES	
Current Assets	$29,021.59	Current Liabilities	$ 9,611.31
Fixed Assets	66,142.23	Fixed Liabilities	32,954.75

Job Descriptions

Certified public accountant examines accounting records of other companies; advises management.

Income tax accountant prepares federal, state, and local tax returns for individuals and businesses.

Auditor verifies accounting records to determine legally acceptable procedures.

Accountant supervises the bookkeeper; advises management about procedures in operating its business.

Bookkeeper prepares business payrolls; maintains accounts receivable and accounts payable.

Training

Entry-level jobs may be prepared for in high school. Most two- and four-year colleges have business programs with an accounting major. A certified public accountant passes a comprehensive state examination in accounting theory, practice, and law.

3. Wanda Jaczek, bookkeeper for her father's plumbing supplies business, completes the weekly payroll for five employees. They are paid in cash, and Wanda prepares a currency sheet to record the number of bills and coins each employee receives. Check to see that each employee is receiving the correct amount, then find the total of each column.

Name	Net Pay	$20	$10	$5	$1	25¢	10¢	5¢	1¢
L. Dee	216.43	10	1	1	1	1	1	1	3
S. Jac	378.55	15	7	1	3	2		1	
W. Jac	168.62		10	12	8	1	3	1	2
R. Koj	155.81	2	6	10	5	3		1	1
C. Zee	223.36	5	10	3	7	4	2	2	6
Total	$1142.77								

4. Helen O'Troy maintains the payroll recrods for Spartan International. If each employee is paid on a 40-hour per week basis, with time-and-a-half for overtime, complete the chart for Helen.

Name	Hours Worked					Rate	Wages Earned		Total
	M	T	W	Th	Fri		Regular	Overtime	
Garcia	8	8	9	9	10	$4.10			
Ditko	9	9	8	8	10	$5.40			
Cohen	10	8	10	8	10	$4.75			
Corleone	8	8	8	8	8	$6.55			

Complete the balance column for a depositor's bankbook.

Date	Withdrawal	Deposit	Interest	Balance
031584		$14.80		$1,236.04
033184			$15.57	
041884		$26.92		
050284	$500.00			
051684		$13.67		
061584		$14.70		
063084			$12.79	

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Career/Distribution

Name _____

Distribution plays an ever increasing role in our nation's economy. Our country produces a mjaor share of the world's goods. Firms involved in distributicn are providing jobs for almost 60 percent of the labor force. Career opportunities for young people are now open to high school graduates in the distribution of goods.

1. William Greenberg is in charge of a large stock room. Last week, 420 packages arrived, averaging 13,4 kg per package. What was the total weight of the merchandise?

2. Ted Rich, a sales representative, wrote the following sales slip for a customer. Fill in the totals.

QTY	ITEM STOCK NO	UNIT Cost	TOTAL
12	#3B11	$1.60	
4	#042M	3.65	
	Sales Tax 7%		
	Total		

3. Regina Roth, a buyer for a large jewelry store, maintains inventory control records for all items. Below is the record for Sheiko Watches, Model #13J for the week of Nov. 3-9. Complete the quantity on hand column.

Date	Sold	Ordered	Arrived	On Hand
Nov. 3				
Nov. 4	2			
Nov. 6		24		
Nov. 7			12	
Nov. 8	3			
Nov. 9	4			

Buyer selects the merchandise to be sold by the firm; visits the producer to examine goods; keeps record of goods on hand and what is "open to buy"

Stock clerk sorts, stores, packages, and in general keeps track of merchandise as it is sent out or arrives.

Salesperson assists customers in their selection and purchase of merchandise.

Layout artist prepares advertising materials for newspapers and magazines.

Announcer advertises goods and services over the radio and television.

Training

Entry-level jobs in this field are often open to high school graduates. High school distributive education programs offer good preparation. Post-high-school programs are available in most junior and community colleges. Full four-year programs are offered by many universities.

4. Ray D'Iorio, a promotion manager at WHEN, sells advertising time at an average price of $250 per minute. Last week, hw signed a contract with Carrier Corporation for 10 30-second spot commercials each day, for 10 days. What is the total amount of this contract?

5. Leonard Snow, Sales Manager for a regional wholesale business, is considering the possibility of a 3% discount to all customers who pay their bills within 10 days of the invoice date. If the total average monthly billings for these customers was $35,000, what would be the total amount paid in discounts in

a.) one month? b. one year?

BEST COPY AVAILABLE

Career/Graphic Arts Name_____

Communications specialists work on radio, television, movies, and newspapers. Printing is one of the oldest forms of communication. It is rated the seventh largest industry in the United States. Graphic arts also involves illustrating, engraving, and packaging.

1. The average length of a word in a 1,200-word essay is 5 letters. How many lines will it take to print the essay using 75 letters per line?

2. The size of a page is 8½ in. by 11 in. There is a 1½ in. margin on the top end on the bottom and a 3/4 in. margin on each side.

   a. What are the dimensions of the printable space on the page?

   b. What is the area of the printable space on the page?

   c. What is the total area of the margin?

3. In a 400-page book, 3% of the pages are used for the introduction and index, 5% for photography, and 10% for diagrams. How many pages have text material on them?

4. A 20-cm by 25-cm photograph was reduced by 1/5 its actual size before it was printed. What are the dimensions of the printed photograph?

Job Descriptions

Production specialist analyzes production problems and recommends solutions; coordinates procurement and delivery of materials; schedules operational steps in the manufacturing process.

Camera technician operates a complete camera which is used in printing operations.

Copier technician repairs and services duplicating equipment.

Printing technician operates and services printing machinery.

Typesetter mechanically sets type.

Training

Training may be available to high school graduates. Most career openings, however, are open to those who have completed at least a community or junior college program.

5. There are 6,000m of paper on a roll of newsprint. If each page requires 0.75m of paper, how many pages can be printed from one roll of newsprint?

6. It takes 38 min to set a page of print by hand. A computer can do the same page in 27% of the time. How long does it take a computer to set a page?

7. Self Magazine printed 534,000 copies of their latest magazine. These are packaged in budnles of 25. If 30% of the copies are sold in New York how many bundles should be sent to New York?

8. A local newspaper has 13,560 paid subscribers. If the paper prints 50,000 copies, what percent are distributed to the paid subscribers?

9. It costs $13,460 to produce 150,000 copies of a daily paper. If prices increase 7% this year, what will be the daily production cost of the paper?

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Career/Insurance

Name_____

Insurance specialists are employed by more than 1,800 companies in the United States. The idea of life and health insurance has changed from one of financial protection to one of promise for enjoyment of life.

1. A claims adjustor examined our auto damaged in an accident. The owners car is covered by collision insurance with a $250 deductible. How much will the insurance company pay for the following damages: bumper -$135, front fender - $385, front grill - $105, hood - $185, and windshield - $197?

2. A life-insurance agent offers Nora Cruz a $25,000 life with an annual premium of $3.89 per $1,000 of coverage. Find Nora's total annual premium.

3. An actuary has statistics from a certain county which indicate that out of a total of 420 traffic fatalities over a period of 7 years, 160 occurred at speeds in excess of 100 km/h. Of these 160, 30% involved male drivers under the age of 25; 20% involved drivers over the age of 65. If new premium rates for collision insurance are to be set, what recommendations do you think the actuary will make?

Job Descriptions

Property and liability insurance agent advises clients on needs according to age and circumstances.

Life-insurance agent specializes in selling life insurance; advises clients on needs according to age and circumstances.

Claims adjustor examines proof of loss or property damage; determines the amount of settlement to be made by the insurance company.

Actuary calculates insurance risks; makes predictions involving long-term financial planning using mathematical formulas.

Investment counselor responsible for the investment of premium money so that beneficiaries can be paid when policies come due; investigates possible investments such as real estate, business ventures, bonds, mortgages, and stocks.

Training

Entry-level jobs are available in field and home offices to high school graduates. These are primarily clerical skills jobs. Many two- and four-year colleges prepare insurance specialists in business administration mathe-matics.

4. Fire and smoke damaged the Schwartz home causing a total of $8,970. Their policy contains an 80% coinsurance clasue, providing for payment using this formula:

$$\text{Amount Paid by Insurance Co.} = \frac{\text{Value of Policy}}{\text{80\% of Value of Property}} \times \text{Fire Loss}$$

How much will the Schwartz's receive if they are insured for $60,000 and their property is valued at $80,000?

5. An actuary developed the table below:

(a) To what age may a 25 -yr. old make expect to live?
(b) To what age may a 25-yr. old female expect to live?
(c) How many years longer may a 40-yr. old female expect to live than a 40-yr. old make.
(d) Which sex is greater insurance risk?

At the age of	0	1	5	10	15	20	25	30	35	40	45	50	55	60
Years male may expect to live	68.1	68.4	64.7	59.8	54.9	50.3	45.8	41.2	36.5	32.0	27.6	23.4	19.6	16.2
Years female may expect to live	75.4	75.6	71.8	66.9	61.9	57.1	52.3	47.5	42.5	38.0	33.4	29.0	24.8	20.7

ANNUAL LIFE INSURANCE PREMIUMS PER $1,000

Age	10-Year Term	Ordinary Life	20-Payment Life	20-Year Endowment	Age	10-Year Term	Ordinary Life	20-Payment Life	20-Year Endowment
15	$9.01	$18.08	$30.42	$51.05	26	$ 9.93	22.78	$35.52	$51.76
16	9.10	18.45	30.87	51.15	28	10.11	23.89	36.57	51.92
18	9.29	19.23	31.79	51.33	30	10.40	25.09	37.71	52.15
20	9.52	20.07	32.69	51.44	35	11.78	28.75	41.04	53.11
24	9.80	21.78	34.53	51.65	40	13.50	33.94	45.47	57.77
25	9.87	22.28	35.01	51.70	50	27.07	43.08	87.02	62.13

6. Find the annual premium on each of the following policies:

   (a) Ordinary life for $1,000 issued at age 25.
   (b) 20-payment life for $5,000 issued at age 22.
   (c) 10-year term for $10,000 issued at age 35.
   (d) 20-year endowment for $8,000 issued at age 40.
   (e) 20-payment life for $15,000 issued at age 28.

7. Mr. Harris bought a 20-year endowment life insurance policy for $4,000 at age 22. If he is alive at the age of 42, how much less will he receive than he paid in?

8. At the age of 24 Mr. Wilson bought a 20-payment life policy for $7,000. What is the total amount of premium he pays for the 20 years? Will the beneficiary receive more or less than Mr. Wilson paid in? How much?

9. Approximately how many times as much ordinary life insurance can be bought for a given premium at age 30 as 20-year endowment insurance?

10. Mr. Patton took out at age 25 an ordinary life policy for $6,000. If he died after paying 9 annual premiums, how much more did the beneficiary receive than Mr. Patton paid in?

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Career: Real Estate

Name _____

Real estate specialists transact business involving land development, homes, apartments, and commercial and industrial buildings. They bring together a seller and a buyer to arrange for purchasing, leasing, and financing. With our increasing population and limited areas, a need for highly skilled people exists in this field.

1. Houses in Hicksville are assessed at 75% of their market value. For how much will a $95,000 house be assessed?

2. The school tax rate in Overshoot is $12.50 per $1,000 of assessed value. Find the tax bill for a $32,000 house.

3. Mr. Smith sold a house for $38,400, a warehouse for $150,000 and a condominium for $350,000. If Mr. Smith earns 7% commission on the house, 5% commission on the warehouse, and 3% commission on the condominium, find his total earnings from the sales.

4. The value of the basic house in the Mendez tract is $28,500. The Smiths want to add these options: one-car garage, $1,500; extra bath, $500; washer/dryer outlets, $400; large hot-water heater, $300; deluxe kitchen cabinets, $800; brick fireplace, $1,500; and wall-to-wall carpeting, $1,200. Find the rate of commission if a real estate agent earns $2,429 from the sale of the house.

5. The value of the Martins' house is $68,000. Mr. Martin is being transferred to a different area of the country where the living expenses are 19% higher than their present location. How much will they have to spend to purchase a house similar to the one they now own?

6. The local bank requires that the purchaser have 25% of the selling price of a house before granting a mortgage. If the Reye family has $10,000, how expensive a house can they afford?

Job Descriptions

Broker licensed to deal in real estate in a particular location; supervises salespersons or works independently

Appraiser inspects property to determine its current market value.

Mortgage and loan officer prepares mortgages; makes title searches for the purchase of property.

Real estate agent works as a salesperson in a real estate agency; computes the asking price for property based on size, appearance, age, and location.

Salesperson works under the direction of a real estate broker; shows property; maintains lists of property available for rental, lease, or sale.

Training

A real estate specialist has the ability to handle negotiations between buyer and seller. Licenses, required in some states, are usually obtained through written examinations. Many banks will train capable employees who have the ability to communicate in both written and oral form. Two- and four-year programs are available on the college level.

7. If two acres of land are assessed at $12,500 in the city of Squedunk, what would the assessment be for 7.5 acres?

8. At $13\frac{9}{20}$ the mortgage rate is $13.50 per $1,000 per month. At $14\frac{9}{20}$ the mortgage rate is $13.67 per $1,000 per month. How much will you save per year on a $45,000 mortgage at the lower rate?

Percent Post-Test

Name _____

1. Write .094 as a percent — 1. _____
2. Write 3/8 as a percent — 2. _____
3. Change 12.5% to decimal. — 3. _____
4. Change 75% to a fraction in lowest terms. — 4. _____

For 5-12 SHOW ALL WORK!!!

5. Find 29% of 75.

6. What percent of 92 is 69?

7. 32% of what number is 13.44?

8. A $450 television is on sale for 15% off. Find the sale price.

9. In Cortland County the sales tax rate is 7%. Find the total cost of a $25 pair of jeans.

10. A real estate salesman charges a 5% commission on all sales. How much will he earn on the sale of a $45,800 house?

11. Tony took Jackie out for dinner. Their total dinner bill was $47.00. If Tony leaves a 15% tip for the waiter, what is the total dinner tab with tip included?

12. In 1981 the price of a gallon of gas was $1.25. In 1983 the price of a gallon of gas was $1.15. What is the percent of decrease in the price of a gallon of gas?

Tables and Graphs

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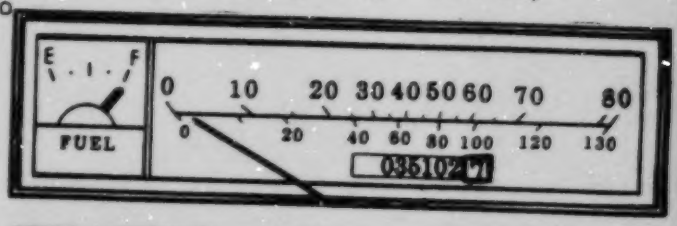
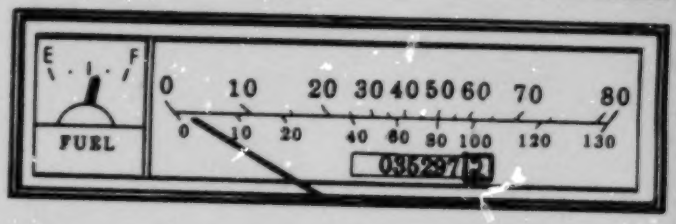
Taking Trips

The Jones and Smith families are friends and visit each other regularly. One day as the Jones family left home on their way to the Smiths' house, the instrument panel on their car looked like this,



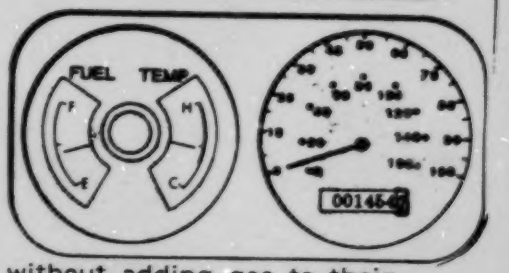
and when they arrived at the Smiths' house, their instrument panel looked like this.



1. Do you think they could return home without adding gas to their tank? Why?
2. How far is it between their houses?
3. Most of this trip was on an interstate highway. About how long do you think it took?
4. About how old do you think the Joneses' car is?

About a month later the Smith family went to visit the Jones family. When they left home the instrument panel on their car looked like this,

and when they arrived at the Joneses' home it looked like this.



5. Do you think the Smith family could return home without adding gas to their tank? Why?
6. How far is it between their houses (according to the odometer on the Smiths' car)?
7. About how old do you think the Smiths' car is?
8. Which car used more gas for the trip?
9. The gas tank on the Smiths' car holds 10 gallons. What was their approximate gas mileage for their trip.

10a. According to the speedometer, about how many kilometers are equivalent to 50 miles?

b. Which unit is smaller: mile or kilometer?

11a. Using your answer to #10a, finish this proportion to find the number of kilometers in 200 miles:

$$\frac{\qquad}{50 \text{ miles}} \quad + \quad \frac{?}{200 \text{ miles}}$$

b. Solve the proportion in part a.

12. How many kilometers did the Jones travel? (Use a proportion).

13. How many kilometers has the Jonese's car travelled altogether?

Chart Reading: Wind Chill Factor Name _____

Instructions: Use the wind chill chart to answer the following questions.

1. For each of the following pairs of wind speed and temperature, find the wind temperature, find the wind chill temperature and classify it as cold, very cold, bitter cold, or extremely cold.

   a. 56 km/h, - 9°C _____
   b. 32 km/h, 2°C _____
   c. 40 km/h, -23°C _____
   d. 8 km/h, -12°C _____
   e. calm, -18°C _____

2. Fill in the chart below.

Temperature (°C)	Wind (km/h)	Wind Chill (°C)
−29	16	____
−21	____	−40
____	48	−57
____	24	−17
−1	____	−20
−32	____	−36
____	8	−17

3. For each of the following pairs of data, state which feels colder.
   a. 4°C with a 56 km/h wind OR -9°C with an 8 km/h wind: _____
   b. -34°C with a 24 km/h wind OR -23°C with a 48 km/h wind: _____
   c. -7°C with a 64 km/h wind OR -23°C with a 16 km/h wind: _____
   d. -4°C with a 48 km/h wind OR -23°C calm: _____

4. If the chill factor is classified as extremely cold, exposed flesh on a person's body will freeze in less than an hour. Steve is skiing on a day when the temperature is -15°C and the wind speed is 40 km/h. He was planning to make four runs, which together might take him more than an hour. What advice would you give him?

5. a. When the thermometer reads 4°C, what is the difference between the lowest wind chill reading and the highest wind chill reading? _____

   b. When the thermometer reads -34°C, what is the difference between the lowest and highest wind chill readings? _____

Wind Chill Chart

Wind Speed	Thermometer Reading (Degrees Celsius)														
	4	2	−1	−4	−7	−9	−12	−15	−18	−21	−23	−26	−29	−32	−34
Calm	4	2	−1	−4	−7	−9	−12	−15	−18	−21	−23	−26	−29	−32	−34
			Cold												
8 km/h	3	1	−3	−6	−9	−11	−14	−17	−21	−24	−26	−29	−32	−36	−37
16 km/h	−2	−6	−9	−13	−17	−19	−23	−26	−30	−33	−36	−39	−43	−47	−50
					Very										
24 km/h	−6	−9	−12	−17	−21	−24	−28	−32	−36	−40	−43	−46	−51	−54	−57
				Cold		Bitter					Extremely				
32 km/h	−8	−11	−16	−20	−23	−27	−31	−36	−40	−43	−47	−51	−56	−60	−63
						Cold					Cold				
40 km/h	−9	−14	−18	−22	−26	−30	−34	−38	−43	−47	−50	−55	−59	−64	−67
48 km/h	−11	−15	−19	−24	−28	−32	−36	−41	−45	−49	−53	−57	−61	−66	−70
56 km/h	−12	−16	−20	−25	−29	−33	−37	−42	−47	−51	−55	−58	−64	−68	−72
64 km/h	−13	−17	−21	−26	−30	−34	−38	−43	−48	−52	−56	−60	−66	−70	−74

103

Almanac Action

Name _____

Directions: Use the almanac listing to help you fill in the blanks in the problems below.

Largest Cities in the World

City	Population	Year	Rank
Bombay	7 605 000	1977	
Calcutta	8 297 000	1977	
London	6 918 000	1978	
Manila	7 500 000	1977	
Mexico City	8 988 000	1978	
Moscow	8 011 000	1979	
New York	6 808 370	1980	
Peking	8 487 000	1975	
São Paulo, Brazil	7 199 000	1977	
Seoul, S. Korea	7 823 000	1978	
Shanghai	10 888 000	1975	
Tokyo	8 514 000	1978	

1. Rank the cities from first to twelfth according to their populations.

2. Identify the following cities:
   (a) seven million, eight hundred twenty-three thousand: _____
   (b) seven million, one hundred ninety-nine thousand: _____
   (c) (7 x 1000 000) + (6 x 100 000) + (0 x 10 000) + (5 x 1000): _____
   (d) (7 x 10) + (5 x 10): _____

3. Determind the population difference between the most and least populated cities above. _____

4. Determine the total population of the North American cities listed above.
   _____

5. Which cities have the most recent and the oldest population figures reported?
   Most recent _____ Oldest _____

6. Round the populations of the cities below to the nearest tenth of a million (for example, 11 756 422 = 11.8 million).
   (a) Tokyo _____ (c) Peking _____
   (b) Bombay _____ (d) Moscow _____

7. Determine the average of the populations of the cities in the almanac listing. Round the average population to the nearest thousand people.
   _____

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Economic Bar Graph/Pictogram Name

How the Dollar Has Shrunk

In the 20th Century

AT THE LONGEST, most vicious spiral of inflation in modern U.S. history winds down, many experts envision a period of price stability ahead.

But experience teaches a different lesson: Except during times of economic depression, the erosion of the dollar's buying power is a constant process.

Even during the 1950s, a period of relatively low inflation, the purchasing power of the dollar shrank 30 percent. From 1971 to 1981, when prices rose 135 percent, a far greater loss of buying power occurred.

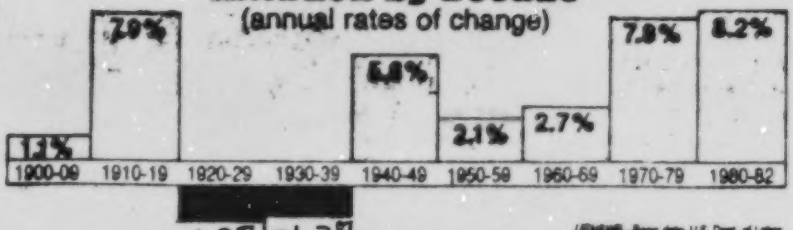
And in the future? If inflation can be held to 4 percent each year until 2000, the value of the 1900 dollar—just 9 cents today—still will shrivel to a mere 4 pennies.

Buying Power of 1900 Dollar

(as deflated by the consumer price index)

Inflation by Decade

(annual rates of change)



SOURCE—Basic data: U.S. Dept. of Labor

Economic Bar Graph/Pictogram Name_____

1. What do the following terms mean to you?

   a. inflation:

   b. economic depression:

   c. consumer price index:

   d. price stability:

Use the pictogram to answer questions 2-5.

2.a. What was the value of the U.S. 1900 dollar in 1930?

   b. What fractional part of the 1900 dollar is this?

   c. What percent of the 1900 dollar is this?

3.a. What was the value of the U.S. 1900 dollar in 1960?

   b. What fractional part of the 1900 dollar is this? (Answer should be in simplest form.)

   c. What percent?

4.a. Waht was the value of the U.S. 1900 dollar in 1982?

   b. What fractional part of the 1900 dollar is this?

   c. What percent?

5.a. Waht fractional part of the 1930 dollar is the 1960 dollar?

   b. Express the fraction in part a. as a percent.

Use the bar graph to answer questions 6-8.

6. During which decade was inflation

   a. the greatest

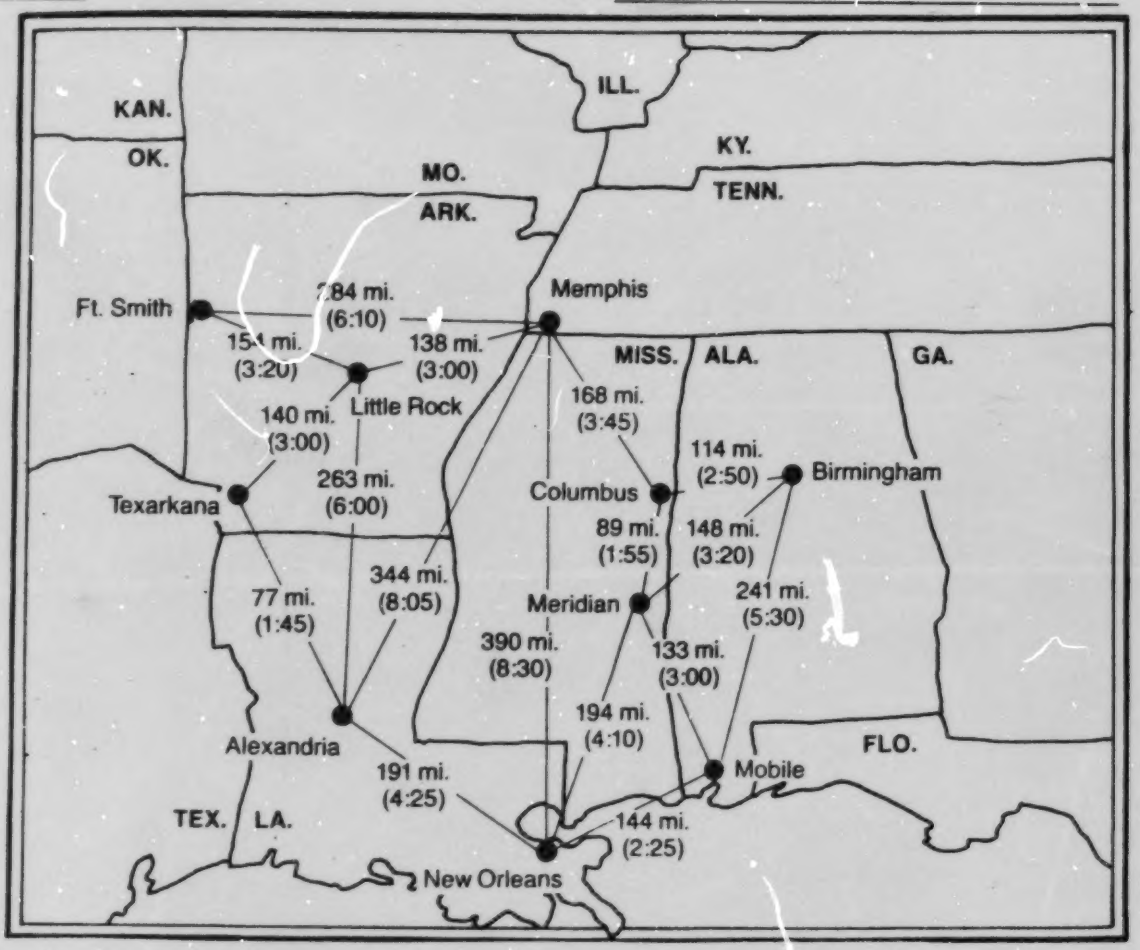
   b. the least

7. During which period was there a depression (a. the inflation rate was negative)?

8. Make a correct statement about inflation between the years 1940 and 1982, based on the information in the bar graph.

Map Fun

Name _____



1. How long would it take to drive from Memphis, Tenn. to New Orleans, La. if you went though Alexandria, La.?

2. How many miles would you drive if you went from Memphis to New Orleans through Columbus, Miss.?

3. Which of the trips would take longer? How much longer?

4. What is the quickest way to drive from Ft. Smith, Ark. to Mobile, Ala.? How long would the trip take?

5. If you wanted to drive from Birmingham, Ala. to New Orleans, La., how much time would you save if you went through Meridian instead of Mobile? How many miles would you save?

6. At what time would you leave Texarkana to arrive in New Orleans at 7:30 p.m.?

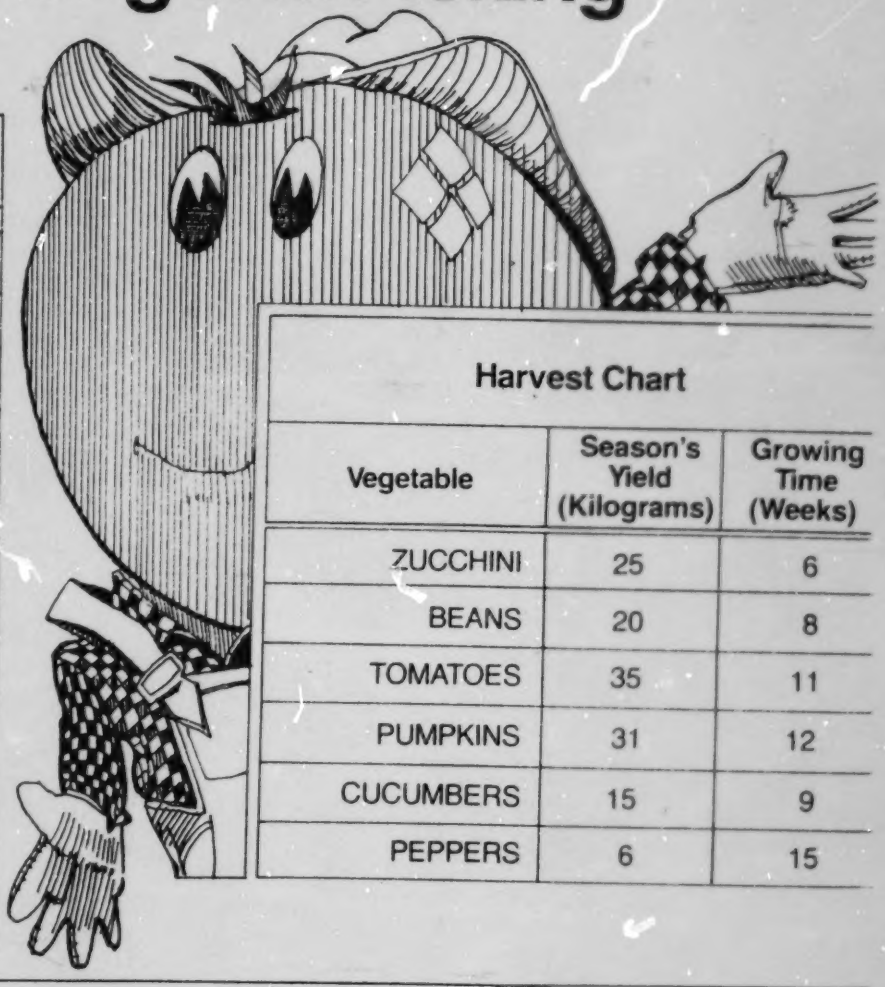
7. At what time would you leave New Orleans to arrive in Columbus, Miss. at 2:00 p.m.?

8. Estimate how long it would take to drive 225 miles. What things should be considered?

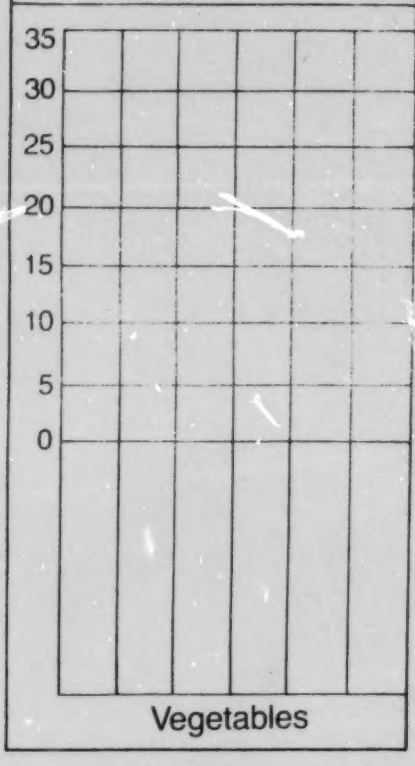
Name _____

Using the information given in the table, complete the graphs.

Planting and Picking



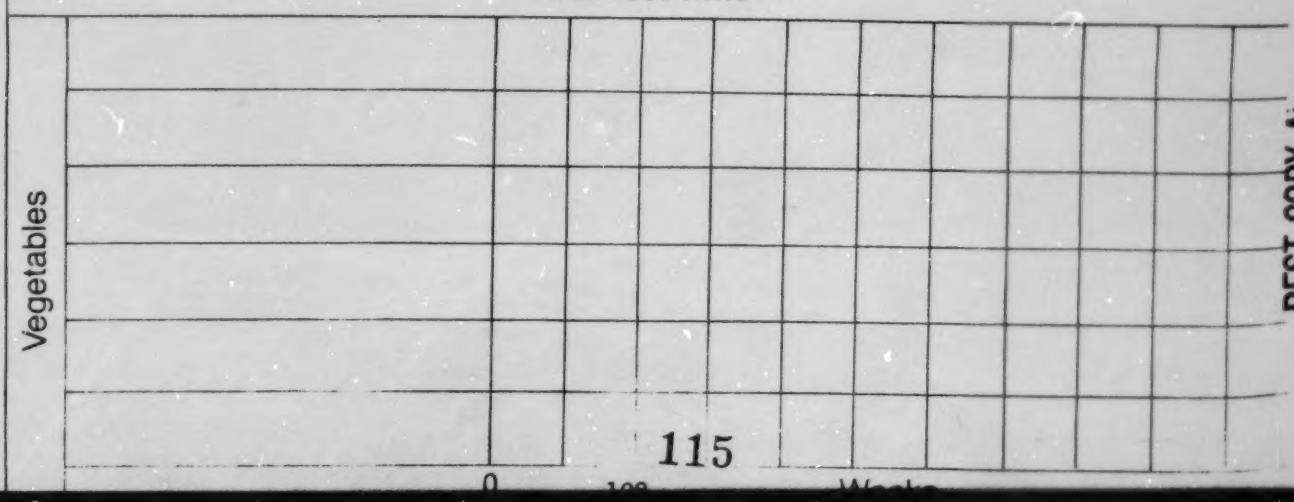
Harvest Yield



Harvest Chart

Vegetable	Season's Yield (Kilograms)	Growing Time (Weeks)
ZUCCHINI	25	6
BEANS	20	8
TOMATOES	35	11
PUMPKINS	31	12
CUCUMBERS	15	9
PEPPERS	6	15

Harvest Time



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Interpreting a Picture Graph Name _____

See page 110

1. In 1976, how many 12-ounce servings of soft drinks did the average American drink? _____

2. By 1982, the average American was drinking _____ more 12-ounce soft drinks than in 1976.

3. During which year did Americans drink an average of 1 soft drink per day? (There are 2 possible correct years.)

4. Based on the graph and increases in consumption between 1976 and 1982, about how many 12-ounce servings would the typical American drink this year?

_____

5. a. Which soft drink sells the most? _____

   b. What is it's percentage of the market? _____

6.a. Pepsi and Diet Pepsi are both major sellers. What is their combined total share of the market? _____

   b. How much bigger is Coke's market share than the combined Pepsi market share? _____

   c. If the Coke and Pepsi market shares are combined, what is the total percentage? _____

   d. About what fractional part of all soft drinks sold in America are either Coke or Pepsi? _____

7. Why do you suppose 30.8% of the market share is listed as "All others" rather than by specific brand?

_____

8. Which three brands have nearly the same market share?

_____ _____ _____

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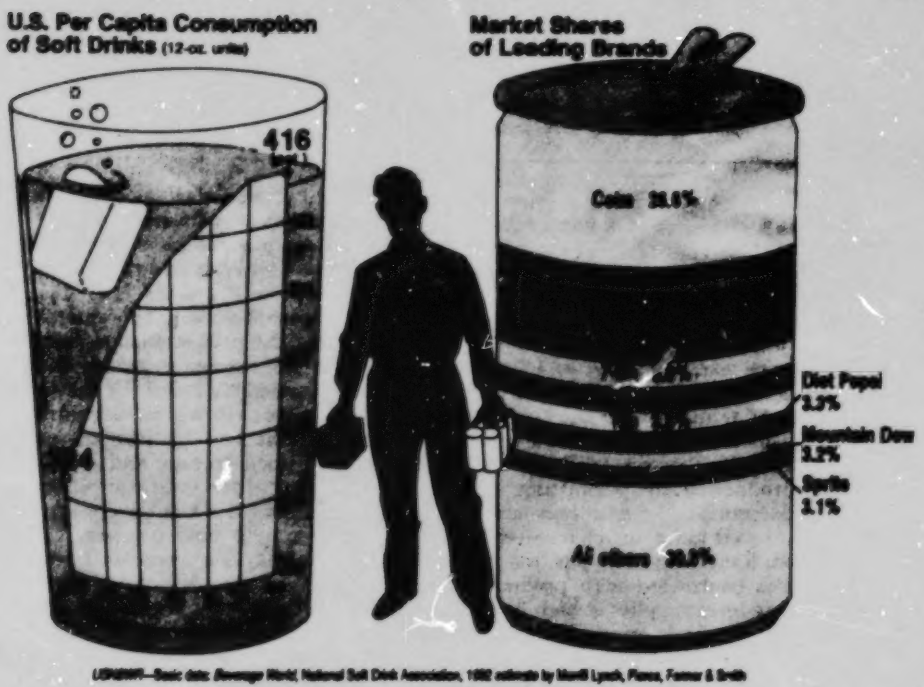
A Thirsty Nation



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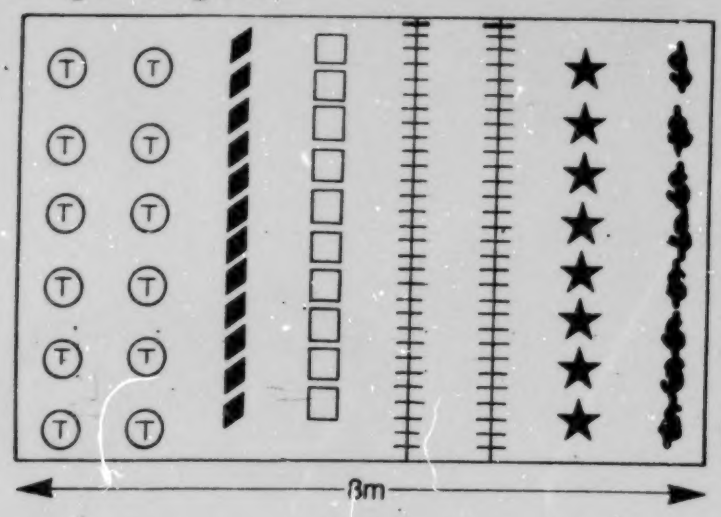
 Name _____

Garden Income and Expenses

Table of anticipated income

Produce	Symbol	Yield	Wholesale price
Tomatoes	Ⓣ	2 kg per plant	40¢ per kg
Corn	▰	3 ears per plant	90¢ per dozen
Cauliflower	□	2 kg head per plant	32¢ per kg
Bush beans	≡	1 kg per m	70¢ per kg
Peppers	★	3 per plant	25¢ apiece
Carrots	▼	2 kg per m	40¢ per kg

Diagram of garden



Use the diagram of the garden and the table to determine the following:

Wholesale prices

1. Tomatoes $ _____
2. Corn $ _____
3. Carrots $ _____
4. Beans $ _____
5. Cauliflower $ _____
6. Peppers $ _____

Garden costs

7. Fertilizer costs $1.95 for a 5-kg bag, which will cover 10 m². What is the cost of fertilizer for the garden?

$ _____

Garden expansion

8. What is the total received from the wholesale prices for the garden? $ _____
9. List the total in wholesale prices received if the whole garden was planted in each of the following:

corn $ _____ tomatoes $ _____

cauliflower $ _____ carrots $ _____

beans $ _____ peppers $ _____

Circle the vegetable that would maximize your garden income.

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Teacher Suggested Activities: Income Tax and Payroll Deductions

The following outdated tables are recommended for the Tables and Graphs unit. Questions to correlate with federal income tax or payroll deductions are left to the discretion of the instructor. Instructor may elect to obtain current tables yearly.

1978 Tax Table A—SINGLE (Filing Status Box 1)

(For single persons with income of $20,000 or less on Form 1040, line 34, who claim 3 or fewer exemptions)

To find your tax: Read down the income column until you find your income as shown on Form 1040, line 34. Read across to the column headed by the total number of exemptions claimed on Form 1040, line 7. The amount shown where the two lines meet is your tax.

If Form 1040, line 34, is—		And the total number of exemptions claimed on line 7 is—			If Form 1040, line 34, is—		And the total number of exemptions claimed on line 7 is—			If Form 1040, line 34, is—		And the total number of exemptions claimed on line 7 is—		
Over	But not over	1	2	3	Over	But not over	1	2	3	Over	But not over	1	2	3
		Your tax is—					Your tax is—					Your tax is—		
If $3,200 or less your tax is 0														
3,000	3,050	283	127	0	7,200	7,250	662	529	352	15,000	15,050	2,472	2,288	2,065
3,050	3,100	291	135	0	7,250	7,300	672	538	362	15,050	15,100	2,486	2,281	2,079
3,100	3,150	300	143	0	7,300	7,350	681	546	371	15,100	15,150	2,501	2,295	2,092
3,150	3,200	308	151	0	7,350	7,400	691	555	381	15,150	15,200	2,515	2,308	2,106
3,200	3,250	317	159	6	7,400	7,450	1,007	862	706	15,200	15,250	2,530	2,322	2,119
3,250	3,300	325	168	14	7,450	7,500	1,018	871	716	15,250	15,300	2,544	2,335	2,133
3,300	3,350	334	176	21	7,500	7,550	1,029	881	727	15,300	15,350	2,559	2,349	2,146
3,350	3,400	342	185	29	7,550	7,600	1,040	890	737	15,350	15,400	2,573	2,362	2,160
4,000	4,050	589	454	276	9,200	9,250	1,051	900	748	19,000	19,050	3,880	3,627	3,364
4,050	4,100	597	463	286	9,250	9,300	1,062	909	758	19,050	19,100	3,897	3,643	3,410
4,100	4,150	606	473	295	9,300	9,350	1,073	919	769	19,100	19,150	3,914	3,659	3,425
4,150	4,200	615	482	305	9,350	9,400	1,084	928	779	19,150	19,200	3,931	3,676	3,441
7,000	7,050	624	492	314	9,400	9,450	1,095	938	790	19,200	19,250	3,948	3,693	3,458
7,050	7,100	634	501	324	9,450	9,500	1,106	947	800	19,250	19,300	3,965	3,710	3,472
7,100	7,150	643	511	333	9,500	9,550	1,117	957	811	19,300	19,350	3,982	3,727	3,487
7,150	7,200	653	520	343	9,550	9,600	1,128	966	821	19,350	19,400	3,999	3,744	3,503

1978 Tax Table B—MARRIED FILING JOINT RETURN (Filing Status Box 2) and QUALIFYING WIDOW(ER)S (Filing Status Box 5)

(For married persons filing joint returns or qualifying widow(er)s with income of $40,000 or less on Form 1040, line 34, who claim 9 or fewer exemptions)

To find your tax: Read down the income column until you find your income as shown on Form 1040, line 34. Read across to the column headed by the total number of exemptions claimed on Form 1040, line 7. The amount shown where the two lines meet is your tax.

If Form 1040, line 34, is—		And the total number of exemptions claimed on line 7 is—								If Form 1040, line 34, is—		And the total number of exemptions claimed on line 7 is—							
Over	But not over	2	3	4	5	6	7	8	9	Over	But not over	2	3	4	5	6	7	8	9
		Your tax is—										Your tax is—							
If $5,200 or less your tax is 0																			
5,000	5,050	435	277	124	0	0	0	0	0	20,200	20,250	2,961	2,774	2,586	2,399	2,181	1,996	1,786	1,588
5,050	5,100	444	285	131	0	0	0	0	0	20,250	20,300	2,974	2,786	2,599	2,411	2,194	1,977	1,777	1,577
5,100	5,150	452	293	139	0	0	0	0	0	20,300	20,350	2,986	2,799	2,611	2,424	2,206	1,988	1,788	1,588
5,150	5,200	461	301	146	0	0	0	0	0	20,350	20,400	2,999	2,811	2,624	2,436	2,219	1,999	1,799	1,599
5,200	5,250	469	309	154	6	0	0	0	0	20,400	20,450	3,011	2,824	2,636	2,449	2,231	2,010	1,810	1,610
5,250	5,300	478	317	162	14	0	0	0	0	20,450	20,500	3,024	2,836	2,649	2,461	2,244	2,021	1,821	1,621
5,300	5,350	484	325	170	21	0	0	0	0	20,500	20,550	3,036	2,849	2,661	2,474	2,256	2,034	1,832	1,632
5,350	5,400	491	333	178	29	0	0	0	0	20,550	20,600	3,049	2,861	2,674	2,486	2,269	2,046	1,843	1,643
12,000	12,050	1,207	1,080	941	783	586	408	242	83	26,200	26,250	5,328	5,088	4,848	4,608	4,338	4,072	3,827	3,582
12,050	12,100	1,218	1,088	950	773	595	418	251	91	26,250	26,300	5,344	5,104	4,864	4,624	4,354	4,086	3,841	3,596
12,100	12,150	1,225	1,097	960	782	605	427	259	99	26,300	26,350	5,360	5,120	4,880	4,640	4,370	4,100	3,855	3,610
12,150	12,200	1,235	1,105	969	792	614	437	268	107	26,350	26,400	5,376	5,136	4,896	4,656	4,386	4,114	3,869	3,624
12,200	12,250	1,245	1,114	979	801	624	446	278	115	26,400	26,450	5,392	5,152	4,912	4,672	4,402	4,128	3,883	3,638
12,250	12,300	1,255	1,122	988	811	633	456	285	123	26,450	26,500	5,408	5,168	4,928	4,688	4,418	4,143	3,897	3,652
12,300	12,350	1,265	1,131	998	820	643	465	293	131	26,500	26,550	5,424	5,184	4,944	4,704	4,434	4,158	3,911	3,666
12,350	12,400	1,275	1,139	1,007	830	652	475	302	139	26,550	26,600	5,440	5,200	4,960	4,720	4,450	4,175	3,925	3,680
18,000	18,050	1,932	1,787	1,602	1,437	1,242	1,054	877	699	32,600	32,650	9,709	9,394	9,079	8,764	8,421	8,083	7,766	7,438
18,050	18,100	1,943	1,778	1,613	1,448	1,253	1,064	886	709	32,650	32,700	9,730	9,415	9,100	8,785	8,440	8,113	7,785	7,458
18,100	18,150	1,954	1,789	1,624	1,459	1,264	1,073	896	718	32,700	32,750	9,751	9,436	9,121	8,806	8,461	8,132	7,805	7,477
18,150	18,200	1,965	1,800	1,635	1,470	1,275	1,083	905	728	32,750	32,800	9,772	9,457	9,142	8,827	8,482	8,152	7,824	7,497
18,200	18,250	1,976	1,811	1,646	1,481	1,286	1,092	915	737	32,800	32,850	9,793	9,478	9,163	8,848	8,503	8,171	7,844	7,518
18,250	18,300	1,987	1,822	1,657	1,492	1,297	1,102	924	747	32,850	32,900	9,814	9,493	9,184	8,869	8,524	8,191	7,863	7,538
18,300	18,350	1,998	1,833	1,668	1,503	1,308	1,111	934	756	32,900	32,950	9,835	9,520	9,205	8,890	8,545	8,210	7,883	7,555
18,350	18,400	2,009	1,844	1,679	1,514	1,319	1,121	943	766	32,950	33,000	9,856	9,541	9,226	8,911	8,566	8,230	7,902	7,575

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Social Security Employee Tax Table

6.13 percent employee tax deductions

Wages		Tax to be withheld	Wages		Tax to be withheld	Wages		Tax to be withheld	Wages		Tax to be withheld
At least	But less than		At least	But less than		At least	But less than		At least	But less than	
2.86	3.02	.18	26.35	26.51	1.62	59.63	59.79	3.66	92.42	92.58	5.67
3.02	3.19	.19	26.51	26.68	1.63	59.79	59.96	3.67	92.58	92.75	5.68
3.19	3.35	.20	26.68	26.84	1.64	59.96	60.12	3.68	92.75	92.91	5.69
3.35	3.51	.21	26.84	27.00	1.65	60.12	60.28	3.69	92.91	93.07	5.70
3.51	3.68	.22	27.00	27.17	1.66	60.28	60.45	3.70	93.07	93.24	5.71
3.68	3.84	.23	27.17	27.33	1.67	60.45	60.61	3.71	93.24	93.40	5.72
3.84	4.00	.24	27.33	27.49	1.68	60.61	60.77	3.72	93.40	93.56	5.73
4.00	4.16	.25	27.49	27.66	1.69	60.77	60.93	3.73	93.56	93.72	5.74
4.16	4.33	.26	27.66	27.82	1.70	60.93	61.10	3.74	93.72	93.89	5.75
4.33	4.49	.27	27.82	27.98	1.71	61.10	61.26	3.75	93.39	94.05	5.76
4.49	4.65	.28	27.98	28.15	1.72	61.26	61.42	3.76	94.05	94.21	5.77
4.65	4.82	.29	28.15	28.31	1.73	61.42	61.59	3.77	94.21	94.38	5.78
4.82	4.98	.30	37.12	37.28	2.28	70.40	70.56	4.32	94.38	94.54	5.79
4.98	5.14	.31	37.28	37.44	2.29	70.56	70.72	4.33	94.54	94.70	5.80
5.14	5.31	.32	37.44	37.61	2.30	70.72	70.89	4.34	94.70	94.87	5.81
5.31	5.47	.33	37.61	37.77	2.31	70.89	71.05	4.35	94.87	95.03	5.82
5.47	5.63	.34	37.77	37.93	2.32	71.05	71.21	4.36	95.03	95.19	5.83
5.63	5.80	.35	37.93	38.10	2.33	71.21	71.38	4.37	95.19	95.36	5.84
5.80	5.96	.36	38.10	38.26	2.34	71.38	71.54	4.38	97.31	97.48	5.97
5.96	6.12	.37	38.26	38.42	2.35	71.54	71.70	4.39	97.48	97.64	5.98
6.12	6.29	.38	38.42	38.59	2.36	71.70	71.86	4.40	97.64	97.80	5.99
6.29	6.45	.39	38.59	38.75	2.37	71.86	72.03	4.41	97.80	97.97	6.00
6.45	6.61	.40	38.75	38.91	2.38	72.03	72.19	4.42	97.97	98.13	6.01
6.61	6.77	.41	38.91	39.08	2.39	72.19	72.35	4.43	98.13	98.29	6.02
13.63	13.79	.84	39.08	39.24	2.40	72.35	72.52	4.44	98.29	98.46	6.03
13.79	13.95	.85	39.24	39.40	2.41	72.52	72.68	4.45	98.46	98.62	6.04
13.95	14.12	.86	39.40	39.56	2.42	72.68	72.84	4.46	98.62	98.78	6.05
14.12	14.28	.87	39.56	39.73	2.43	72.84	73.01	4.47	98.78	98.94	6.06
14.28	14.44	.88	39.73	39.89	2.44	73.01	73.17	4.48	98.94	99.11	6.07
14.44	14.61	.89	39.89	40.05	2.45	73.17	77.33	4.49	99.11	99.27	6.08
14.61	14.77	.90	47.88	48.05	2.94	80.84	81.00	4.96	99.27	99.43	6.09
14.77	14.93	.91	48.05	48.21	2.95	81.00	81.16	4.97	99.43	99.60	6.10
14.93	15.09	.92	48.21	48.37	2.96	81.16	81.33	4.98	99.60	99.76	6.11
15.09	15.26	.93	48.37	48.54	2.97	81.33	81.49	4.99	99.76	99.92	6.12
15.26	15.42	.94	48.54	48.70	2.98	81.49	81.65	5.00	99.92	100.00	6.13
15.42	15.58	.95	48.70	48.86	2.99	81.65	81.82	5.01			
15.58	15.75	.96	48.86	49.03	3.00	81.82	81.98	5.02			
15.75	15.91	.97	49.03	49.19	3.01	81.98	82.14	5.03			
15.91	16.07	.98	49.19	49.35	3.02	82.14	82.31	5.04			
16.07	16.24	.99	49.35	49.52	3.03	82.31	82.47	5.05			
16.24	16.40	1.00	49.52	49.68	3.04	82.47	82.63	5.06			
16.40	16.56	1.01	49.68	49.84	3.05	82.63	82.79	5.07			
16.56	16.73	1.02	49.84	50.00	3.06	83.28	83.45	5.08			
16.73	16.89	1.03	50.00	50.17	3.07	83.45	83.61	5.09			
16.89	17.05	1.04	50.17	50.33	3.08	83.61	83.77	5.10			
17.05	17.22	1.05	50.33	50.49	3.09	82.79	82.96	5.11			
17.22	17.38	1.06	50.49	50.66	3.10	82.96	83.12	5.12			
17.38	17.54	1.07	50.66	50.82	3.11	83.12	83.28	5.13			

The multiples of the withholding for FICA on $100 are

Wage	Tax to be withheld
$100	$6.13
200	12.26
300	18.39
400	24.52
500	30.65
600	36.78
700	42.91
800	49.04
900	55.17
1,000	61.30

SINGLE Persons — **WEEKLY** Payroll Period

And the wages are—		And the number of withholding allowances claimed is—										
At least	But less than		1	2	3	4	5	6	7	8	9	10 or more
		The amount of income tax to be withheld shall be—										
$ 94	$ 96	$ 11.10	$ 7.60	$ 4.40	$ 1.50	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
96	98	11.50	8.00	4.70	1.80	0	0	0	0	0	0	0
98	100	11.80	8.40	5.00	2.10	0	0	0	0	0	0	0
100	105	12.50	9.00	5.50	2.60	0	0	0	0	0	0	0
105	110	13.40	9.90	6.40	3.40	.50	0	0	0	0	0	0
110	115	14.30	10.80	7.30	4.10	1.20	0	0	0	0	0	0
115	120	15.20	11.70	8.20	4.90	2.00	0	0	0	0	0	0
120	125	16.10	12.60	9.10	5.70	2.70	0	0	0	0	0	0
125	130	17.00	13.50	10.00	6.60	3.50	.60	0	0	0	0	0
130	135	17.90	14.40	10.90	7.50	4.20	1.40	0	0	0	0	0
135	140	19.00	15.30	11.80	8.40	5.00	2.10	0	0	0	0	0
140	145	20.00	16.20	12.70	9.30	5.80	2.90	0	0	0	0	0
145	150	21.10	17.10	13.60	10.20	6.70	3.60	.70	0	0	0	0
150	160	22.60	18.60	15.00	11.50	8.10	4.70	1.80	0	0	0	0
160	170	24.70	20.70	16.80	13.30	9.90	6.40	3.30	.50	0	0	0
170	180	26.80	22.80	18.80	15.10	11.70	8.20	4.80	2.00	0	0	0
180	190	28.90	24.90	20.90	16.90	13.50	10.00	6.50	3.50	.60	0	0
190	200	31.00	27.00	23.00	18.90	15.30	11.80	8.30	5.00	2.10	0	0
200	210	33.80	29.10	25.10	21.00	17.10	13.80	10.10	6.70	3.80	.70	0
210	220	36.20	31.20	27.20	23.10	19.10	15.40	11.90	8.50	5.10	2.20	0
220	230	38.80	33.80	29.30	25.20	21.20	17.20	13.70	10.30	6.80	3.70	.80
230	240	41.40	36.40	31.40	27.30	23.30	19.20	15.50	12.10	8.60	5.20	2.30
240	250	44.00	39.00	34.00	29.40	25.40	21.30	17.30	13.90	10.40	6.90	3.80
250	260	46.60	41.60	36.60	31.60	27.50	23.40	19.40	15.70	12.20	8.70	5.30
260	270	49.20	44.20	39.20	34.20	29.60	25.50	21.50	17.50	14.00	10.50	7.10
270	280	51.80	46.80	41.80	36.80	31.80	27.60	23.60	19.60	15.80	12.30	8.90
280	290	54.80	49.40	44.40	39.40	34.40	29.70	25.70	21.70	17.80	14.10	10.70
290	300	57.80	52.10	47.00	42.00	37.00	32.00	27.80	23.80	19.70	15.90	12.50
300	310	60.80	55.10	49.60	44.60	39.60	34.60	29.90	25.90	21.80	17.80	14.30
310	320	63.80	58.10	52.30	47.20	42.20	37.20	32.20	28.00	23.90	19.90	16.10
320	330	66.80	61.10	55.30	49.80	44.80	39.80	34.80	30.10	26.00	22.00	17.90
330	340	70.00	64.10	58.30	52.50	47.40	42.40	37.40	32.40	28.10	24.10	20.00
340	350	73.40	67.10	61.30	55.50	50.00	45.00	40.00	35.00	30.20	26.20	22.10
350	360	76.80	70.30	64.30	58.50	52.80	47.80	42.80	37.80	32.80	28.30	24.20
360	370	80.20	73.70	67.30	61.50	55.80	50.20	45.20	40.20	35.20	30.40	26.30
370	380	83.60	77.10	70.50	64.50	58.80	53.00	47.80	42.80	37.80	32.80	28.40
380	390	87.00	80.50	73.90	67.50	61.80	56.00	50.40	45.40	40.40	35.40	30.50
390	400	90.40	83.90	77.30	70.80	64.80	59.00	53.20	48.00	43.00	38.00	33.00
400	410	93.80	87.30	80.70	74.20	67.80	62.00	56.20	50.60	45.60	40.60	35.60
410	420	97.20	90.70	84.10	77.60	71.10	65.00	59.20	53.50	48.20	43.20	38.20
420	430	100.60	94.10	87.50	81.00	74.50	68.00	62.20	56.50	50.80	45.80	40.80
430	440	104.10	97.50	90.90	84.40	77.90	71.30	65.20	59.50	53.70	48.40	43.40
440	450	108.00	100.90	94.30	87.80	81.30	74.70	68.20	62.50	56.70	51.00	46.00
450	460	111.90	104.40	97.70	91.20	84.70	78.10	71.60	65.50	59.70	53.90	48.60
460	470	115.80	108.30	101.10	94.60	88.10	81.50	75.00	68.50	62.70	56.90	51.20
470	480	119.70	112.20	104.70	98.00	91.50	84.90	78.40	71.80	65.70	59.90	54.20
480	490	123.60	116.10	108.60	101.40	94.90	88.30	81.80	75.20	68.70	62.90	57.20
490	500	127.50	120.00	112.50	105.00	98.30	91.70	85.20	78.60	72.10	65.90	60.20
500	510	131.40	123.90	116.40	108.90	101.70	95.10	88.60	82.00	75.50	69.00	63.20
510	520	135.30	127.80	120.30	112.80	105.30	98.50	92.00	85.40	78.90	72.40	66.20

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MARRIED Persons — WEEKLY Payroll Period

And the wages are—		And the number of withholding allowances claimed is—										
At least	But less than	0	1	2	3	4	5	6	7	8	9	10 or more
		The amount of income tax to be withheld shall be—										
$ 150	$ 160	$17.20	$13.70	$10.60	$ 7.70	$ 4.80	$1.90	$0	$0	$0	$0	$0
160	170	18.00	15.50	12.10	9.20	6.30	3.40	.50	0	0	0	0
170	180	20.80	17.30	13.80	10.70	7.80	4.90	2.00	0	0	0	0
180	190	22.60	19.10	15.60	12.20	9.30	6.40	3.50	.80	0	0	0
190	200	24.40	20.90	17.40	14.00	10.80	7.90	5.00	2.10	0	0	0
200	210	26.20	22.70	19.20	15.80	12.30	9.40	6.50	3.60	.80	0	0
210	220	28.10	24.50	21.00	17.60	14.10	10.90	8.00	5.10	2.30	0	0
220	230	30.20	26.30	22.80	19.40	15.90	12.50	9.50	6.60	3.80	.90	0
230	240	32.30	28.30	24.80	21.20	17.70	14.30	11.00	8.10	5.30	2.40	0
240	250	34.40	30.40	26.40	23.00	19.50	16.10	12.80	9.80	6.80	3.90	1.00
250	260	36.50	32.50	28.50	24.80	21.30	17.90	14.40	11.10	8.30	5.40	2.50
260	270	38.60	34.60	30.60	26.60	23.10	19.70	16.20	12.70	9.80	6.90	4.00
270	280	40.70	36.70	32.70	28.60	24.90	21.50	18.00	14.50	11.30	8.40	5.50
280	290	42.80	38.80	34.80	30.70	26.70	23.30	19.80	16.30	12.90	9.90	7.00
290	300	45.10	40.90	36.90	32.80	28.80	25.10	21.60	18.10	14.70	11.40	8.50
300	310	47.50	43.00	39.00	34.90	30.90	26.90	23.40	19.90	16.50	13.00	10.00
310	320	49.90	45.30	41.10	37.00	33.00	28.90	25.20	21.70	18.30	14.80	11.50
320	330	52.30	47.70	43.20	39.10	35.10	31.00	27.00	23.50	20.10	16.60	13.20
330	340	54.70	50.10	45.50	41.20	37.20	33.10	29.10	25.30	21.90	18.40	15.00
340	350	57.10	52.50	47.90	43.30	39.30	35.20	31.20	27.20	23.70	20.20	16.80
350	360	59.50	54.90	50.30	45.70	41.40	37.30	33.30	29.30	25.50	22.00	18.60
360	370	61.90	57.30	52.70	48.10	43.50	39.40	35.40	31.40	27.30	23.80	20.40
370	380	64.60	59.70	55.10	50.50	45.90	41.50	37.50	33.50	29.40	25.80	22.20
380	390	67.40	62.10	57.50	52.90	48.30	43.70	39.60	35.60	31.50	27.50	24.00
390	400	70.20	64.80	59.90	55.30	50.70	46.10	41.70	37.70	33.60	29.60	25.60
400	410	73.00	67.60	62.30	57.70	53.10	48.50	43.80	39.80	35.70	31.70	27.60
410	420	75.80	70.40	65.00	60.10	55.50	50.90	46.20	41.90	37.80	33.80	29.70
420	430	78.60	73.20	67.80	62.50	57.90	53.30	48.60	44.00	39.90	35.90	31.80
430	440	81.40	76.00	70.60	65.20	60.30	55.70	51.00	46.40	42.00	38.00	33.90
440	450	84.20	78.80	73.40	68.00	62.70	58.10	53.40	48.80	44.20	40.10	36.00
450	460	87.00	81.60	76.20	70.80	65.40	60.50	55.80	51.20	46.60	42.20	38.10
460	470	90.20	84.40	79.00	73.60	68.20	62.90	58.20	53.60	49.00	44.40	40.20
470	480	93.40	87.30	81.80	76.40	71.00	65.60	60.60	56.00	51.40	46.80	42.30
480	490	96.60	90.50	84.60	79.20	73.80	68.40	63.10	58.40	53.80	49.20	44.60
490	500	99.80	93.70	87.50	82.00	76.60	71.20	65.90	60.80	56.20	51.60	47.00
500	510	103.00	96.90	90.70	84.80	79.40	74.00	68.70	63.30	58.60	54.00	49.40
510	520	106.20	100.10	93.90	87.70	82.20	76.80	71.50	66.10	61.00	56.40	51.80
520	530	109.40	103.30	97.10	90.90	85.00	79.60	74.30	68.90	63.50	58.80	54.20
530	540	112.60	106.50	100.30	94.10	88.00	82.40	77.10	71.70	66.30	61.20	56.60
540	550	115.80	109.70	103.50	97.30	91.20	85.20	79.90	74.50	69.10	63.70	59.00
550	560	119.00	112.90	106.70	100.50	94.40	88.20	82.70	77.30	71.90	66.50	61.40
560	570	122.70	116.10	109.90	103.70	97.60	91.40	85.50	80.10	74.70	69.30	63.90
570	580	126.40	119.30	113.10	106.90	100.80	94.60	89.50	82.90	77.50	72.10	66.70
580	590	130.10	123.00	116.30	110.10	104.00	97.80	91.70	85.70	80.30	74.90	69.50
590	600	133.80	126.70	119.50	113.30	107.20	101.00	94.90	88.70	83.10	77.70	72.30
600	610	137.50	130.40	123.20	116.50	110.40	104.20	98.10	91.90	85.90	80.50	75.10
610	620	141.20	134.10	126.90	119.80	113.60	107.40	101.30	95.10	89.00	83.30	77.90
620	630	144.90	137.80	130.60	123.50	116.80	110.60	104.50	98.30	92.20	86.10	80.70
630	640	148.60	141.50	134.30	127.20	120.10	113.80	107.70	101.50	95.40	89.20	83.50
640	650	152.30	145.20	138.00	130.90	123.80	117.00	110.90	104.70	98.60	92.40	86.30

Probability and Statistics

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Practice in Probability Name_____

1. When you roll a regular 6-sided dice, what is the probability of rolling:

   a. a 5?

   b. a number greater than 3?

   c. a 1, 2 or 4

   d. a 1, 3, 5 or 7?

   e. a number 7 or greater?

   f. a number less than 9?

   g. a 1, 3 or 5?

   h. How do the answers to d & g compare? Why is this true?

2. What is the probability of selecting one marble out of the bag without looking and getting:

   a. a white marble?

   b. a striped marble?

   c. a purple marble?

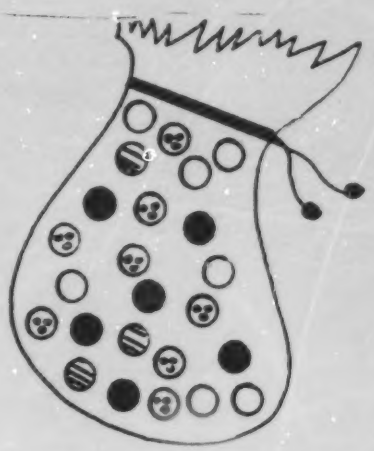
   d. a striped or a black marble?

   e. a black marble?

   f. a speckled marble?

   g. a purple or a white marble?

   h. a write, a black or a speckled marble?



Rolling Dice! Name_____

1. A pair of dice are rolled. How many possible outcomes are there?

2. Draw a tree diagram of the sample space for rolling a pair of dice.

3. Draw a frequency table of the possible sums that can occur when you roll two dice.

Use your tree diagram to answer these questions:

What is the probability of:

4. rolling doubles?

5. rolling a 3 and an even number?

6. rolling a sum of 5?

7. rolling a sum of 7 or 11?

8. rolling a sum of at least 9?

9. rolling a 4 and a prime number?

10. rolling sums that are factors of 12?

For this spinner, what is the probability of spinning:

a. a 3?

b. a 4?

c. an even number?

d. a prime number?

e. a multiple of 3?

f. a composite number?

g. a multiple of 2 and 3?

h. a factor of 12?

i. a multiple of 4 and 6?

j. a number between 2 and 8?

Statistic: Golfing Name_____

Chris and Jerry went golfing at the Oak Tree Country Club. Chris's scores for 18 holes of golf were as follows: 6, 4, 5, 6, 7, 4, 4, 5, 7, 5, 3, 6, 3, 4, 5, 6, 5, and 5.

(1) Complete the frequency table shown.

Score	Tally	Frequency	Sum
3			
4			
5			
6			
7			

(2) Find the range of the golf scores. _____

(3) Find Chris's mean score. _____

(4) Find her mode score. _____

(5) Find her median score. _____

(6) What conclusion can you draw about the mean, the median, and the mode?

_____

(7) Using the table above, explain why this happened?

_____

_____

Statistics: Test Scores Name_____

Ms. Snow tested her class recently on the statistic unit of their class. The scores are as follows:

75 85 95 100 95 75 95 100 75 100 80 80 90 90 85

85 95 85 75 90 95 90 95 75 80 75 100 75 90 85

(1) Complete the frequency table shown.

Score	Tally	Frequency	Sum
75			
80			
85			
90			
95			
100			

(2) Find the range of the test scores. _____

(3) Find the mean grade. _____

(4) Find the mode grade. _____

(5) Find the median grade. _____

(6) What percent of the students passed the test? _____

(7) What percent of the students scored at least 90 on the test? _____

(8) What is the probability of selecting a test paper with a grade of 80 on it? _____

Career: Auto Technology Name_____

The work of automotive technicians directly affects every industrial activity. The ever-increasing demand for more and greater power has created a need for technicians. They must be able to produce and analyze the equipment that has been designed by scientists and engineers.

Job Descriptions

Engine test technician prepares gas turbine and diesel engines for operation; installs test instruments to record information.

Service manager plans the auto service department; selects equipment; organizes and manages shops; assists in diagnosing automotive problems.

Utility technician compares fuels on test engines; determines knock characteristics of fuels.

Emission Control Research Engineer studies and develops catalytic converters which convert exhaust emissions to water and harmless gases.

High performance engine technician designs, tests, analyses, and maintains engines now available in the automotive industry.

1. A new compact car gets an average of 28.6 miles per gallon of gasoline in combined city and highway driving. How many miles should the car be able to travel on a tank of thirteen gallons?

2. A 1972 Cadillac weighs 4,280 pounds. A 1984 model of the same car weighs 3,635 pounds. What is the percent of decrease in the weight of the car?

3. In a recent study, utility technicians found that cars equipped with radial tires saved as much as 6% on fuel. Jan gets 19 miles per gallon and pays $1.20 per gallon of gasoline. How much can he save on a 722 mile trip by putting radial tires on his car?

4. Arco unleaded with methanol has been found to be 15% more efficient. If a car averages 21 miles per gallon, how many miles per gallon could be expected by using Arco unleaded?

5. Harry Wong, the service manager of Oriental Motors, maintains records of the life spans of autos sold. He found that they lasted 96, 54, 75, 84, 68, 72, 96, 64, 85, 78 and 102 months, respectively. What is the mean life spans of these cars? The median life span? The mode life span of those cars? If you were a salesman, which statistical tool would you use to sell the car?

6. Charlie Chips travels about 22,000 miles last year as a sales representative. His expenses for the year were $363.00. This year, to conserve energy, Charlie reduced his speed. He traveled 25,000 miles at an expense of $357.50. How much does Mr. Chips save per mile?

7. Eddie Spaghetti is the service manager of LeMon Autos. His mechanics receive 45% of the labor charges and 15% of the charges for parts. If the rate for labor is $18.00 per hour, how much do the mechanics receive per hour of work?

8. If a customer is charged $45.00 for labor and $65.00 for parts, what will the mechanic earn on the job?

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Geometry

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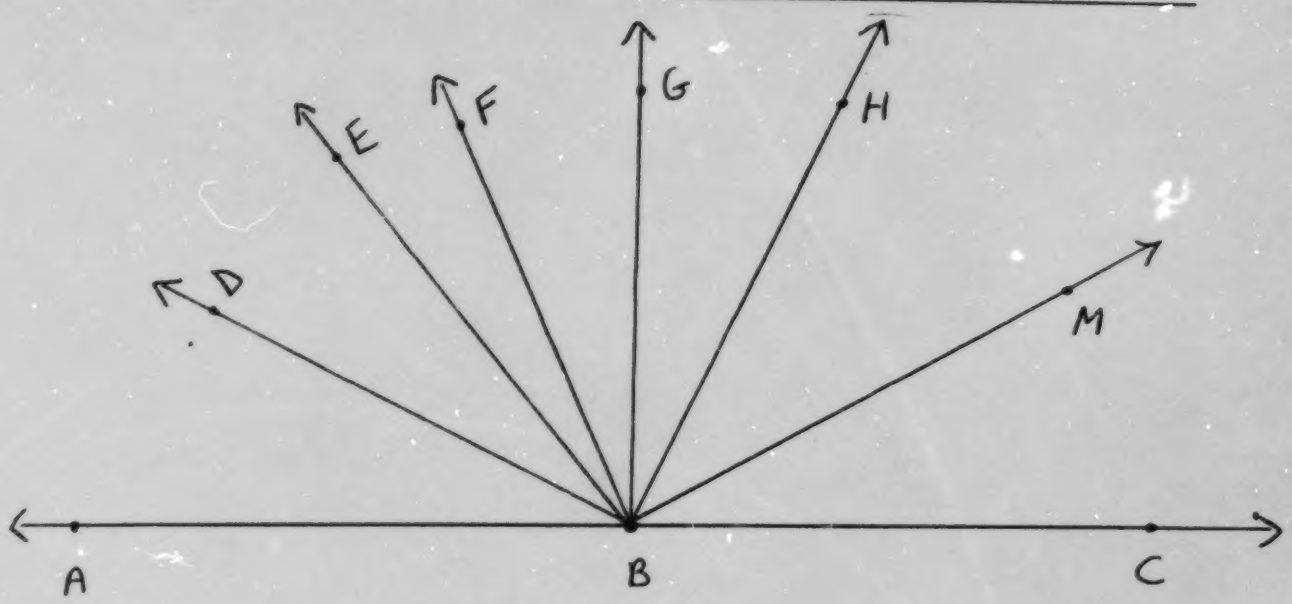
Identification

Name _____



1. Identify each angle as either acute, obtuse, right, or straight.

∠HBM = _____	∠DBH = _____
∠FBG = _____	∠EBF = _____
∠ABM = _____	∠EBC = _____
∠GBC = _____	∠MBC = _____
∠ABC = _____	∠EBH = _____

Answer these questions relating to angles.

2. How many degress of vision does the ordinary person have without turning his/her head?

3a. How many degrees do you turn if, after facing north, you turned clockwise and faced east?

b. If you turn counter-clockwise from north to east, how many degrees did you turn?

4. What time of day could it be if the hands of a clock form a 90° angle when the minute hand is on 12? (2 possible answers)

5. Through how many degrees has the minute hand moved in 30 minutes? in 1 hour?

Using Geometric Tools and Drawing Triangles
Teacher notes for Student worksheets
(from The Mathematics Teacher: September, 1981)

Materials:
Compass
Protractor
Ruler
Set of worksheets
Extra paper

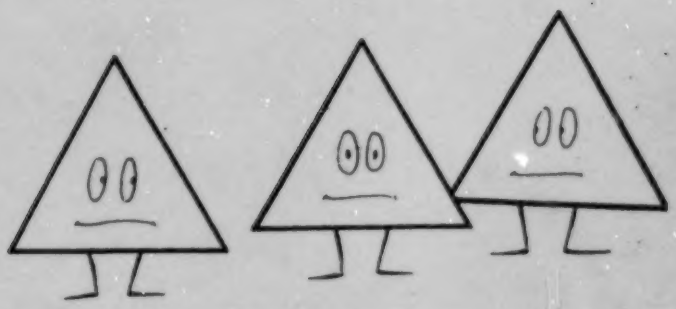
Objectives: Students will use compasses, protractors, and rulers correctly to trisect angles, draw triangles, and draw parallel lines without construction.

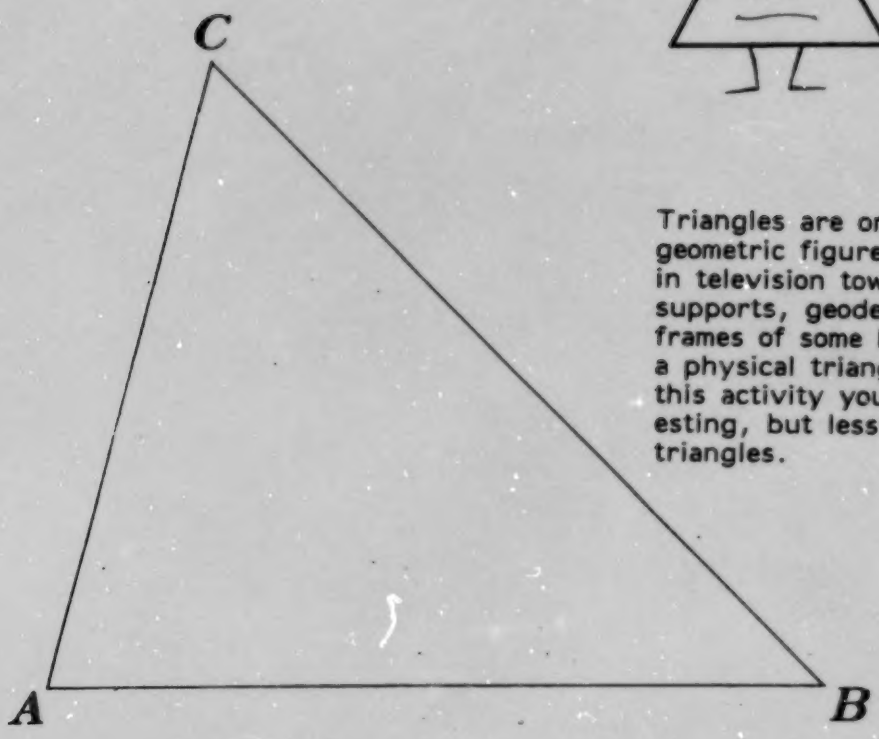
Instructions: Sheet 1 leads students to a discovery of Morley's Theorem (1899) that the points of intersection of the adjacent trisectors of the angles of any triangle are the vertices of an equilateral triangle.

Obviously, the theorem statement is secondary to the student's measurement of the angles, and trisection, using division by 3 and protractors. Teachers may need to help with the idea of "adjacent trisectors".

Sheet 2 provides practice in drawing parallel lines. Result of the activity: x and x" should always coincide.

The sheets are independent of each other and may be done on different days as appropriate.





Triangles are one of the most common geometric figures around us. We see them in television towers, trestle bridges, roof supports, geodesic domes, and in the frames of some bicycles. This is because a physical triangle is a rigid figure. In this activity you will discover other interesting, but less well known, properties of triangles.

1a. Use a protractor to trisect each angle of the triangle above. (To trisect an angle means to divide it into three congruent angles.)

b. Label the points where the adjacent trisectors of different angles intersect X, Y, and Z. (The adjacent trisectors of two angles of a triangle are the trisectors, one at each vertex, "closest" to the common side of the angles.)

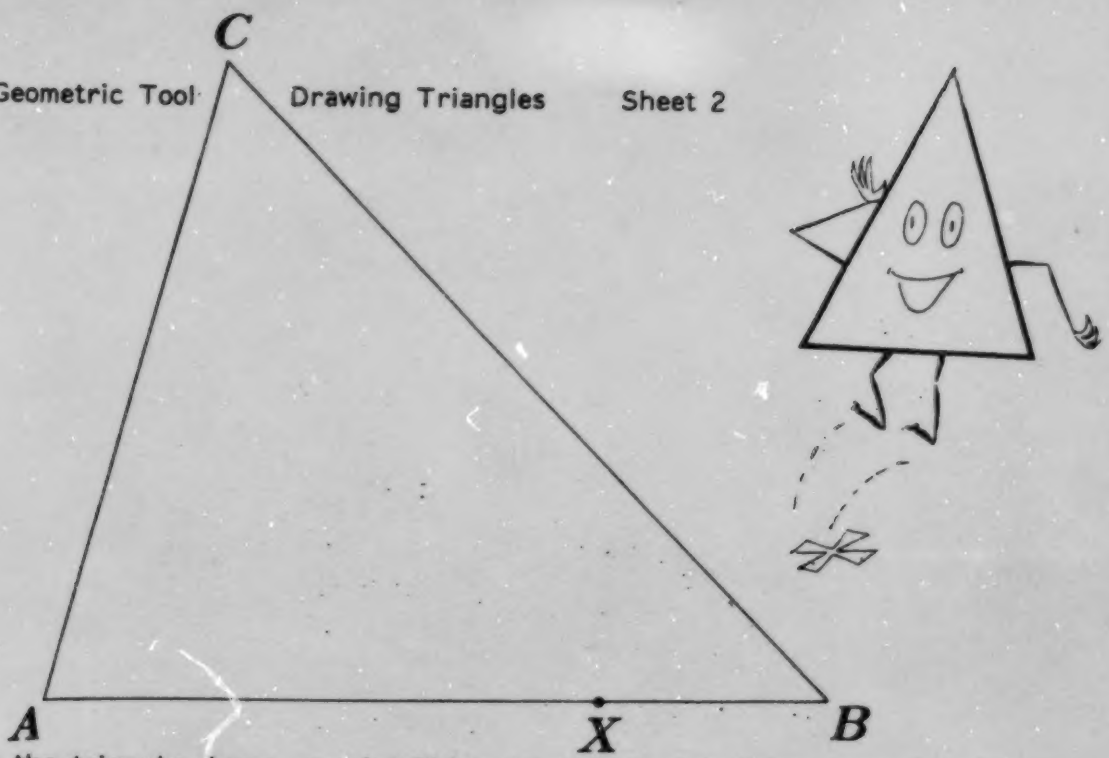
c. Draw △XYZ.

d. Use a ruler or a compass to compare the lengths of the sides of △XYZ.

e. What kind of triangle is △XYZ? _____

2. On a separate sheet of paper, draw at least two more large, differently shaped triangls and repeat steps a-e in each case.

3. It's amazing! For each triangle, the three points of intersection of the adjacent trisectors of its angles form _____



1. On the triangle above, a point X has been marked between A and B.
   a. Use a ruler to draw a line through X parallel to side $\overline{AC}$. Label the intersection with $\overline{BC}$ point Y.

   b. Through Y, draw a line parallel to side $\overline{AB}$. Label the intersection with $\overline{AC}$ point Z.

   c. Through Z, draw a line paralles to side $\overline{BC}$ and label the intersection with $\overline{AB}$ point X.

   d. Repeat steps a-c, starting this time with point X. Label the intersection points on the sides of the triangle Y', Z', and X", respectively.

What appears to be true about points X and X"? _____

2. Trace △ABC on a sheet of paper. Choose any point between A and B and label it X. Follow steps a-d. What appears to be true about points X and X" this time? _____

_____

3. Check to see if this amazing result holds for any triangle you choose to draw.

4. Try to find a point X on side $\overline{AB}$ of △ABC above so that when steps a through c are completed points X and X' coincide.

Triangles, Rectangles, and Parallelograms
Teacher notes for Student worksheets
(from The Mathematics Teacher: February, 1983)

Materials: Scissors
ruler
extra paper
set of worksheets for each student

Objectives: Students use physical models of triangles, rectangles and parallelograms to find relationships among their areas and structure.

Instructions: Students work individually on the exercises, beginning on Sheet 1. The teacher may help direct students through exercise 2 with cut-outs on an overhead projector. Six quadrilaterals are possible here since each side of the 2nd triangle can fit 2 ways to each side of the first.

The aim of Sheet 2 is to show that any triangle can be seen as half of a rectangle. Students can physically fit triangles E and G on F and H and J on I.

Answers: 2a. 6b. 3c. quadrilaterals (chevrons and kites)
d. Area of triangle = 1/2 the area of the quadrilateral
4. 3
5. b. Second triangle is similar with an area 4 times the original.
7. d. All have same area
8. b. A=F; E=G; F is twice as large as E
c. Equal
9. b. A=I; I=F; H & J will vary
10. Answers vary

Triangles, Rectangles, and Parallelograms
Sheet 1

Name _____

1. On a separate sheet of paper, make two copies of the triangle at the right.

2. Cut out the two triangles and then place them together so that they have a side in common.

   a. How many different four-sided figures can be formed in this way?

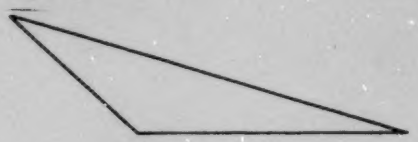
   _____ Make a small sketch of each shape in the space below.

   b. How many of these figures are parallelograms? _____

   c. What might you call the remaining figures? _____

   d. How does the area of the original triangle above compare to the area of each quadrilateral you formed? _____

3. The area of any triangle can be viewed as one-half the area of some parallelogram. For each triangle below, draw a parallelogram so that the area of the triangle is one-half the area of the parallelogram.



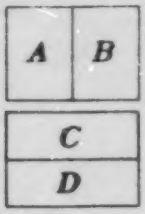
4. The parallelograms you drew in 3 are called related parallelograms. How many related parallelograms can be drawn for each triangle? _____

5. a. Draw all three related parallelograms on the triangle at the right.

   b. What do you notice about the size, shape, and area of the resulting figure? _____

Triangles, Rectangles, and Parallelograms Name _____

6. Cut out the four rectangles on sheet 3.



7.a. Divide one rectangle vertically into two congruent parts and label them as shown.

b. Divide a second rectangle horizontally into two congruent parts and label them as shown.

c. Cut apart the four pieces, A,B,C, and D.

d. Which piece is larger in area:

A or B? _____ C or D? _____
A or C? _____ A or D? _____

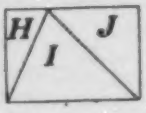
8.a. Take another rectangle, find the midpoint of one of the longer sides, draw the segments, and label them as shown at the right. Cut apart the three pieces.

b. Which piece is larger in area:

A or F? _____ E or F? _____ E or G? _____

c. How does the area of E plus the area of G compare to the area of F? _____

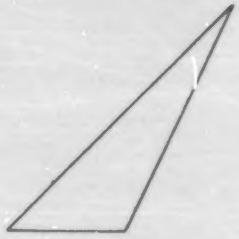
9.a. Take the fourth rectangle; pick any point, other than midpoint, on one of the longer sides; draw the segments; and label them as shown at the right. Cut apart the three pieces.



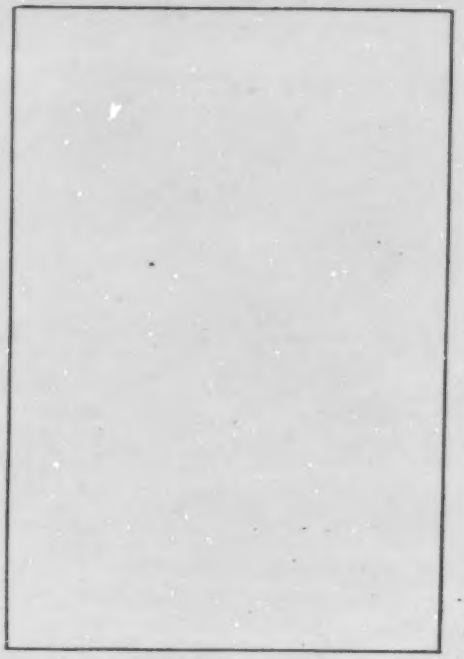
b. Which piece is larger in area:

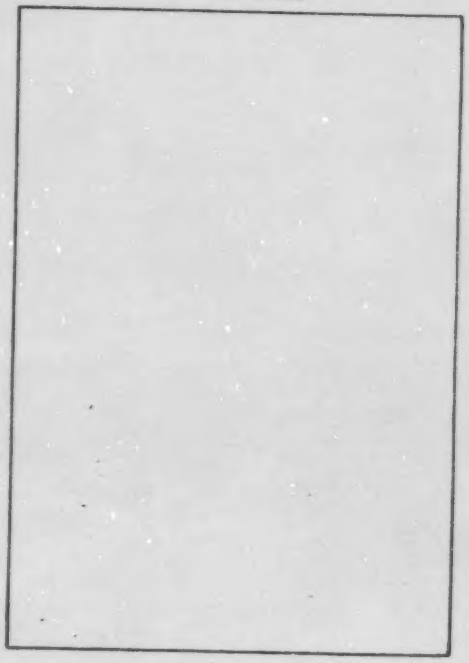
A or I? _____ H or J? _____ I or F? _____

10. For any rectangle, we can find many triangles whose areas are one-half the area of the rectangle. Let's try reversing the process. For each triangle below, draw a rectangle so that the area of the triangle is one-half the area of the rectangle.



Triangles, Rectangles, and Parallelograms Name_____
Sheet 3





Triangle Investigation: Right or Not? Name_____

Teacher notes for student worksheets
(from The Mathematics Teacher: April, 1979)

Needed:
Centimeter grid paper
Ruler
Scissors
Set of 2 worksheets

Objectives:
Students will draw squares of a given area on centimeter grid paper.

Students will use square cut-outs to form the sides of triangles.

Students will measure angles with a protractor and classify by type.

Students will identify the type of triangles formed from their angle measure.

Students will enter data on tables and make conclusions from the data generated.

Instructions:
Give Sheet 1 to students and work through as much as necessary with the class. When placing the squares on the desks to form triangles, it may be easier for students to work in pairs so that one can hold the squares in place while the other uses a protractor.

On Sheet 2, point out that table entries should be lengths, not areas.

The conclusions reached on Sheet 2 should reinforce the Pythagorean Theorem.

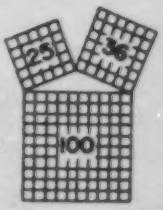
Triangle Investigation: Right or Not? Name_____

Sheet 1

Instructions:

(a) Using the centimeter grid provided, cut out squares with areas 9, 16, 25, 36, 64, 81, 100, 121, 144, and 169, and several more of your choice.

(b) Use three of the squares to construct a triangle as shown:



(c) Measure the angles of the triangle formed to determine if the triangle is acute, right, or obtuse. Enter the data in table 1 below.

(d) Repeat the process with additional sets of three squares and enter the data in the table.

TABLE 1

Area of the Largest Square	Area of the Smallest Square	Area of the Remaining Square	Sum of the Area of the Two Smaller Squares	Is the Triangle Formed Acute, Right, or Obtuse?
100	25	36	61	obtuse
100	36	64		
36	16	25		
169	81	100		
25	9	16		
64				
81				
121				
144				

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Triangle Investigation: Right or Not? Name _____

Sheet 2

Instructions:

(a) Complete table 2 below using your data from table 1. On this table state the measure of the length of the sides of the squares, rather than the area.

TABLE 2

Length of Side of Largest Square (Longest Side of the Triangle)	Square of Length of Longest Side	Length of Side of Smallest Square (Shortest Side of the Triangle)	Length of Side of Remaining Square (Remaining Side of the Triangle)	Sum of Squares of Two Smaller Sides of the Triangle	Is the Triangle Formed Acute, Right, or Obtuse?
10	100	5	6	61	obtuse

(b) Use the data from table 2 to complete the following statements:

1. If the square of the longest side of a triangle is less then the sum of the squares of the two smaller sides, the triangle is a(n) _____ triangle.

2. If the square of the longest side of a triangle is equal to the sum of the squares of the two smaller sides, the triangle is a(n) _____ triangle.

3. If the square of the longest side of a triangle is greater than the sum of the two smaller sides, the triangle is a(n) _____ triangle.

Measurement of Geometric Figures

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[illegible] Cards	139 - 140
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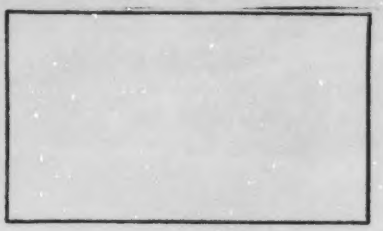
Perimeter

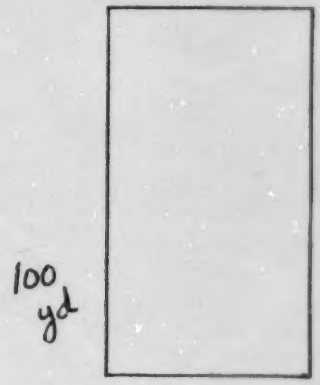
Name _____

Find each perimeter:

1.

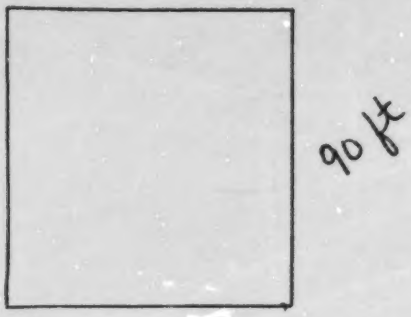


2.

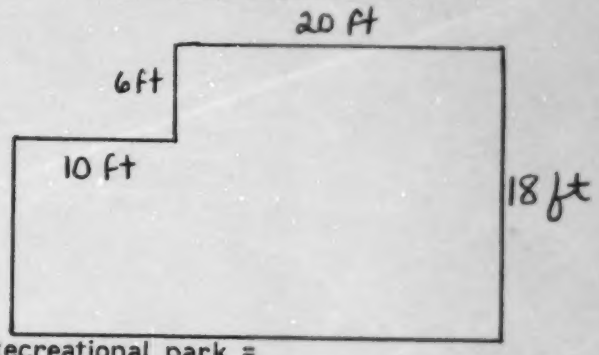


Fence aroudn the rabbit pen = _____

3. Baseball diamond = _____

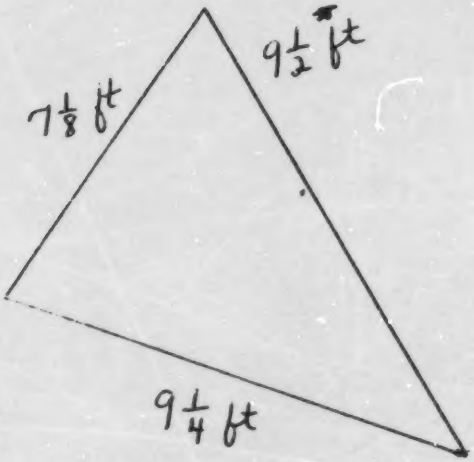


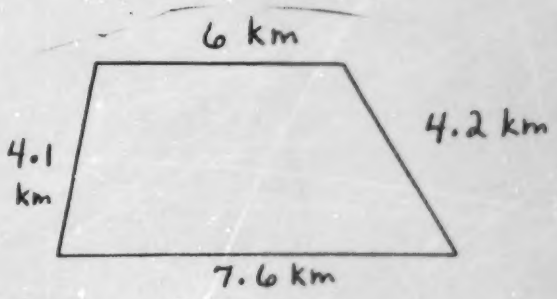
Fence around the swimming pool = _____



5. Flower garden = _____

Recreational park = _____





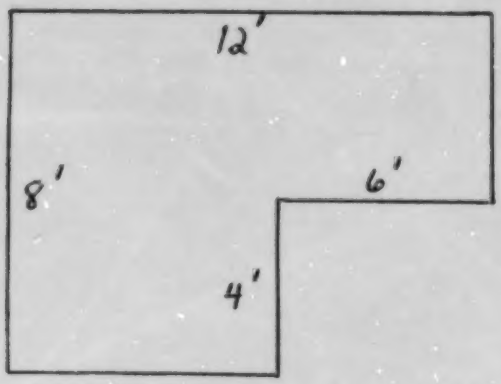
Area

Name _____

1. Linoleum

How many square yards of linoleum are needed to cover the kitchen floor? (1 sq. yd. = 9 sq. ft.)

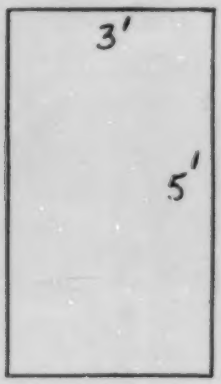
_____ sq. yd.



2. Installing Screens

How much will copper screening cost for this window if the screening is priced at $.98/sq. foot?

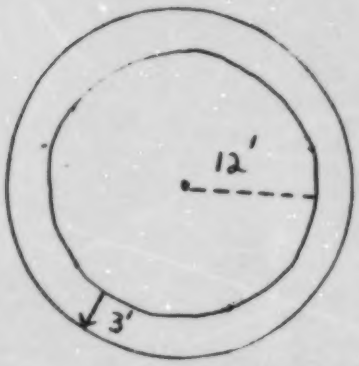
_____



3. Laying sod

_____ sq. yd.

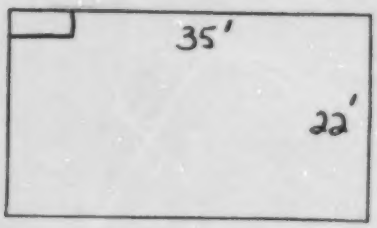
How many square feet of sod will be needed to cover the grass plot around the gold fish pool?



4. Installing ceiling tile

How many sound proofing tiles 5 ft. by 2 fr. are needed to cover the ceiling of this club room?

_____ pieces of tile

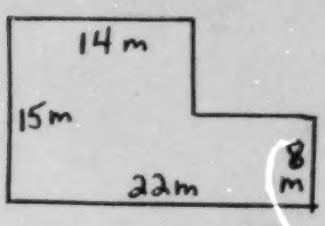


Find the total

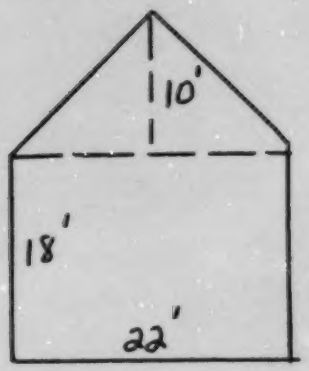
Name _____

Area for each figure

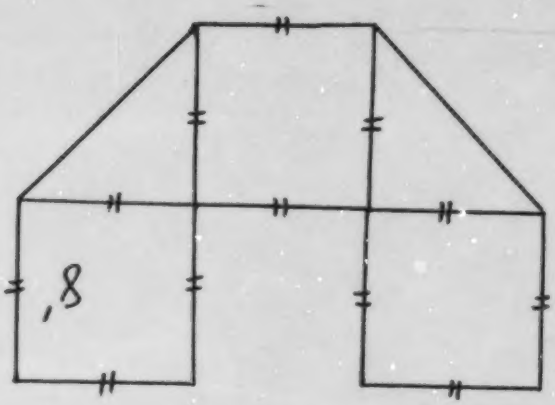
1.



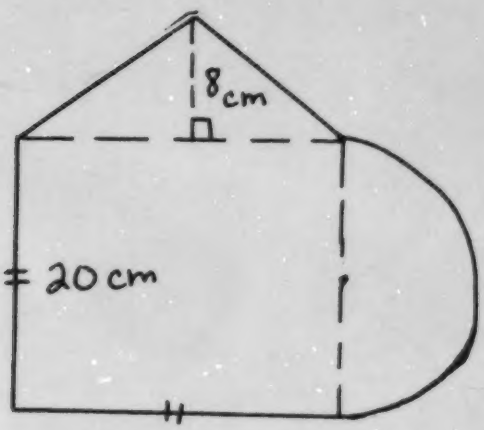
2.



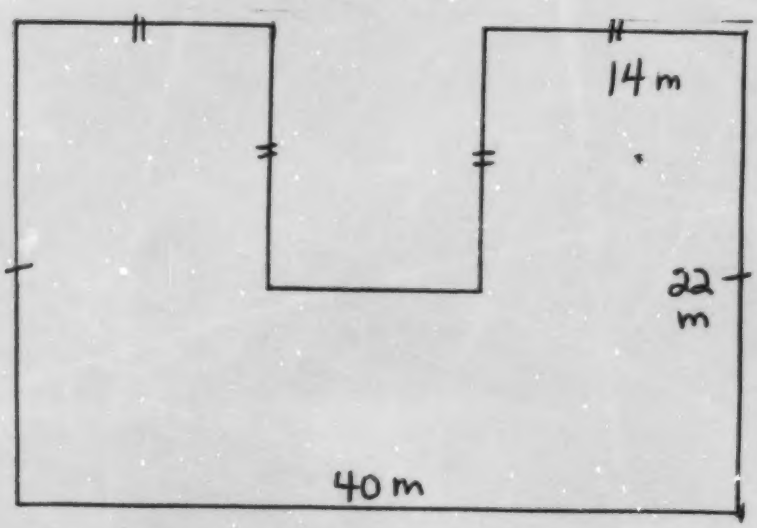
3.



4.



5.



Game A & P Cards

Number of palyers: 2

Materials: Worksheet
deck of cards (with face cards removed)

Playing the game:

1. Remove all face cards. The value of a card is the number stated on the card with aces having a value of one.

2. Deal 20 cards to each player.

3. One player becomes the "area person" and the other player is the "perimeter person". Half way through the game the players switch roles.

4. In the first round, one player plays as many top cards as necessary to represent the dimensions of the first figure on the worksheet. Each person computes his/her own measurement. The person with the greater measurement receives a point.

5. Each player continues rotating in this manner until all problems on the worksheet are completed. Reshuffling of the deck may be necessary.

6. The player, at the end of the game, with the most points wins.

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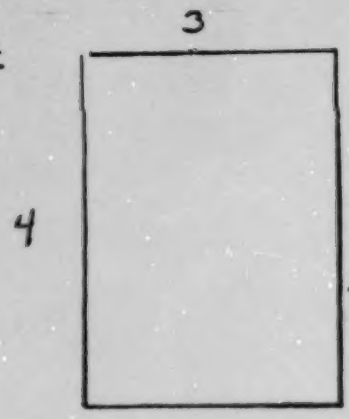
Example:



Area = 12
Perimeter = 14

Perimeter wins

Worksheet:

Figure	length	width	height	base 1	base 2	leg 1	leg 2	leg 3	side	perimeter	area
Square	x	x	x	x	x	x	x	x			
Scalene Triangle	x	x		x	x						
Rectangle			x	x	x	x	x	x	x		
Rhombus	x	x		x	x	x	x	x			
Isosceles Triangle	x	x			x		x	x	x		
Parallelogram	x	x			x	x	x	x			
Trapezoid	x	x						x	x		
Equilateral Triangle	x	x		x	x	x	x	x			
Isosceles Trapezoid	x	x					x	x	x		
Square	x	x	x	x	x	x	x	x			
Scalene Triangle	x	x		x	x				x		

Remodeling the Family Room Name _____

"Our family room needs remodeling," said Barbie Dohl. "You're right," said Ken Dohl. "If we remodel now, we will save money on materials."

1. "Our family room measures 13' by 20'. Each sheet of paneling is 4' wide. We will need _____ sheets of paneling."

2. "Each sheet of paneling costs $17.99. We will need $_____ for paneling."

3. "We will need _____ square foot ceiling tiles."

4. "At 79¢ per tile, that will cost $_____."

5. "We will need _____ feet of cove molding for the ceiling at 75¢ per foot and _____ feet of baseboard at $4.20 per 8 foot length."

6. "We can purchase carpeting for $12.99 per square yard. This will cost us $_____."

7. "But padding costs $3.50 per square. This is an additional $_____."

8. "Don't forget the installation charge of $40 and the $.50 per foot charge for the tack strip. So, altogether the carpeting will cost $_____."

9. "Casing for windows and doors sells for 85¢ per foot. We will need 17' of casing for each of our three doors. Don't forget we will need 16' of casing per window. For each of our 4 windows. This means we will need _____ feet of casing."

10. "Casing will cost $_____."

11. "Ken, you have forgotten to include nails," said Barbie. "You're right!" said Ken. "I will need four pounds of nails at 98¢ per pound. Nails will cost _____."

12. "Including $10 for stain and varnish, our remodeled family room will cost $_____."

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Name_____

Career/Home Furnishings

Home furnishing specialist create certain effects through elements of design. These specialists are also called interior decorators and interior designers. As long as there is a desire to combine comfort and beauty, there will continue to be career opportunities in this field. Today interior designers work closely with architects in homes, businesses, and industry.

1. Ken Zipken, a display specialist, is allowed a budget of $9,600 for completing six window displays. Two windows are 6m long and four are 5m long. What is the average amount per meter that Ken may paln to spend?

2. Doria Jason, the buyer for the linen departments of four Cortland Stores, has a budget of $135,000 for the annual January white sale. The stock on hand at the end of the year is expcted to be $75,000. If each store does an equal volume of business, what amount will she assign to each store? What will be the total cost of the merchandise available in each store?

3. Ms. Maharis, a consultant at Blueberg's, is preparing a comparative cost chart for customers who purchase vinyl tile at $1.69 per square foot. What is the total cost for each size?

Size (ft.)	Material	Installation	Total
7 x 9		$29.50	
8 x 10		$37.50	
9 x 13		$39.50	
11 x 14		$47.50	

4. The Parkers are thinking about buying an area rug that measures 3.6m by 5.8m and costs $720. A wall-to-wall rug with similar pattern and quality costs $28.75/m including installation. If their room measures 4.2m by 6.3m, which rug is less expensive? As a consultant, would your recommendation be made on any basis other than cost?

Job Descriptions

Consultant advises customers in retail stores on particular phases of decorating such as upholstery, draperies, furniture, floor coverings, and lighting.

Display specialist plans and implements the promotion of merchandise through displays in retail stores.

Furniture restorer repairs, cleans, and refinishes antique furniture.

Interior designer provides advice on the selection of home furnishings.

Furniture repairer repairs, reupholsters, and refinishes used furniture.

Training

Entry-level jobs are available to some high school graduates with a distributive education background. Many community and junior colleges offer programs. Four-year college programs in design are available.

5. The Frares are thinking about wall-to-wall carpeting for their living room. Their living room has dimensions 15 ft. by 18 ft. The carpeting costs $11.99 per square yard, the pad costs $3.50 per square yard, and tack strip costs $1.80 per yard. Installation costs $50.00. What is the total cost to carpet this living room?

6. Suppose you needed to buy furniture for your first apartment. The following prices are given: safa $450, chair $219 each, coffee table $169 and end tables $95 each.

   a. find the cost for 1 sofa, 2 chairs, 1 coffee table and 2 end tables.

   b. find the amount of sales tax at 7% on your purchase.

   c. if the entire room sold as a package deal for $1,219, which way would it be better to buy (individual pieces or package)? What is the price difference (before taxes)?

Integers

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Integers: +, −, ×, ÷	147
[illegible]	148

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Addition/Subtraction: Integers Name_____

Solve each problem:

1. A football team gained 9 yards, lost 6 yards and gained 12 yards. What was the net result?

2. Jeffrey had $400 in a checking account. He made deposits of $140 and $260. He has to write checks for $170, $205, and $380. How much money will Jeffrey have left in his account?

3. At noon, the temperature was 14°C. The temperature rose 5°C between noon and 1 PM, rose 4°C between 1 and 2 PM, and then fell 2°C between 2 and 3 PM. What was the temperature at 3 PM?

4. A mountain climber is located at 4,000 feet above sea level. A submarine is located at 11,500 feet below sea level. What is the difference between the levels?

5. Mr. Large weighed 310 lbs. in March! He decided to go on a diet and he lost 14 lbs. in April, lost 10 lbs. in May, gained 3 lbs. in June and lost 16 lbs. in July. What was his weight at the end of July?

6. Freida Moneybags owns stock in the TAN Company. If the stocks started at 9 3/8, fell 2 1/8, gained 2 1/2, fell 1 1/4, and gained 2, what is the final value of the stocks?

7. The temperature at an airport is 72°F. At the flying altitude it is -34°F. How many degrees difference is there between these two temperatures?

8. Danny Lotto bets on the races. If he started with $300, lost $56 and $84, make $212, then lost $50, (a) how much money did he end up with? (b) What was his net gain or loss?

Integers (+, -, x, ÷) Name_____

*Have students solve the problems first, then give them the code and have them decode the message.

First Word: -13 • -1 ; -1 • -1 ; -5 • -5

Second Word: -25 + +50 ; 30 - 15 ; -7 • -3 ; -3 • -6

Third Word: -2 - (-6) ; -12 - (-13) ; 100 - 75

Fourth Word: -1 • -2 ; -1 • -5

Fifth Word: -10 - (-21)

Sixth Word: -2 • -11 ; 2 - (-3) ; -9 • -2 ; -50 - (-75)

Seventh Word: -2 + 10 ; -4 - (-5) ; -2 • -8 ; 20 - 4 ; -26 - (-51)

Eighth Word: -3 • -5 ; -2 • -7 ; -10 - (-15)

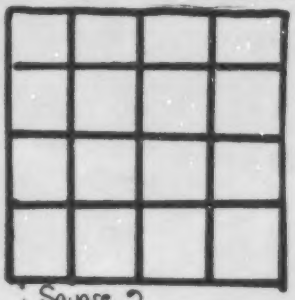
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Q	R	S	T	U	V	W	X	Y	Z
17	18	19	20	21	22	23	24	25	26

Magic Square: Integer Operations Name _____

48	1	21	-22
6	-13	33	44
23	36	-26	27
19	-42	-32	9

Square 1.



Square 2.

1. Using your calculator if possible, find the square of each number in Square 1 and put the answer in the corresponding box of Square 2.

2. Now, using Square 2, find the sum of each a. horizontal row:

   _____ _____ _____ _____

   b. vertical row:

   _____ _____ _____ _____

   c. diagonal row (with 4 entries)

   _____ _____ _____ _____

3. Draw a box around the first 2 columns in Square 1. Now multiply each number in the first column with its partner to the right:

   48 x 1 = _____ 6 x -13 = _____

   23 x 36 = _____ 19 x -42 = _____

   Add the positives: _____ Add the negatives: _____

   What is the sum of all these pairs? _____

4. Try the same procedure with the other two columns:

   _____ x _____ = _____ _____ x _____ = _____

   _____ x _____ = _____

   Sum of these pairs = _____ x _____ = _____

5. Follow the same procedure with any two rows. (Find the products of adjacent pairs of numbers and add these products.)

6. Try the same procedure with two other rows.

7. State a conclusion about the magic square, based on your calculations above.

8. This magic square was first published in 1851. What would have made these calculations more difficult then?

Algebra

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Magic Algebra

Teacher Notes for Student Worksheets
(Edited from The Mathematics Teacher: March, 1980)

Materials: Set of 2 worksheets for each student
Calculators optional

Objective: The students will use smiple arithmetic operations in a puzzle format to discover the efficiency of variables.

Instructions: Have the students work through Sheet 1 before passing Sheet 2. Little guidance will probably be necessary before the last step, making the activity useful for group or individual work.

Magic Algebra

Name _____

Sheet 1

Recently I found myself in the company of Matt-E-Magic, a skillful magician. He involved me in some interesting math magic tricks, some of which I want to share with you.

1.

INSTRUCTIONS	NUMBER CHOICES
Choose any number	5 12 36 81
Multiply by 2	10
Add 5	15
Multiply by 5	75
Subtract 25	50
Divide by 10	5

a. Follow Matt-E-Magic's instructions for the numbers 12, 36, and 81 above. Write each step as in the example.

b. Suppose the magician's instructions were carried out for a decimal, such as 0.62. What do you think the final result would be? Carry out the instructions and test your prediction.

c. Do you think the result of this magical trick will always be the number chosen?

2.

INSTRUCTIONS	NUMBER CHOICES
Choose any number	9 22 -5 0.3
Multiply by 3	27
Add 8	35
Add your original number choice	44
Divide by 4	11
Subtract your original number choice	2

a. Follow Matt-E-Magic's instructions for the other numbers, 22, -5, and 0.3.

b. Will the result of this magical trick always be 2? Check it one more time with a number of your choice.

Magic Algebra

Name _____

Sheet 2

3.

INSTRUCTIONS	NUMBER CHOICES
Choose any number	14 30 -7 0.4
Add the number one larger than your original number choice	29
Add 11	40
Divide by 2	20
Subtract your original number choice	6

a. Follow Matt-E-Magic's instructions for the nubmers 30, -7, and 0.4.

b. Do you think the result of this magical trick will always be 6? Check it one more time using a number of your choice.

What is the secret behind these math magic tricks?

To find out, let us reconsider the first tirck, on sheet 1. Suppose we refer to the number chosen as "number," or more simply as just n.

Choose any number	number	n
Multiply by 2	2(number)	2n
Add 5	2(number) + 5	2n + 5
Multiply by 5	10(number) + 25	10 n + 25
Subtract 25	10(number)	10 n
Divide by 10	number	n

Aha! Now it is easy to see why the magic works. Since "number" or n can represent any particular choice of number, the result must always be the original number.

4. Discover the magic behaind tricks 2 and 3 by using the word "number" or the letter n for the number chosen in each case. Write each step on a separate line as was done above.

Linear Equations with Calculators and Decimals

Teacher Notes for Student Worksheet
(from The Mathematics Teacher, February 1981)

Materials: Worksheet
Calculators

Objectives: Students will solve linear equations where the variable has a coefficient of 1 and the constants have 2 decimal places.

Students will add and subtract decimals using a calculator.

Instructions: Work through the example with students and explain the magic square checking mechanism. Some classes may require help with -x problems.

Answers:

A. 5.51
B. 3.98
C. 5.33
D. 4.76
E. 4.94
F. 5.12
G. 4.55
H. 5.90
I. 4.37

Linear Equations with Calculators and Decimals Name _____

Student Worksheet

Solve for x by thinking and by using a calculator.

Example: x + 25.3 = 71.4
Think x = 71.4 - 25.3; then calculate.
x = 46.1

1. Solve for x.

A.	x - 4.93 = 0.58	A.	x = _____
B.	x + 14.7 = 18.68	B.	x = _____
C.	0.38 + x = 6.16	C.	x = _____
D.	205.8 = 210.56 - x =	D.	x = _____
E.	x - 4.68 = 0.26	E.	x = _____
F.	x - 57.34 = -52.22	F.	x = _____
G.	-7.11 = -2.56 + (-x)	G.	x = _____
H.	54.38 + x = 60.28	H.	x = _____
I.	87.48 - x = 83.11	I.	x = _____

2. Copy the answers in the corresponding cells of the box.

A	B	C
D	E	F
G	H	I

3. A magic square is an array of numbers where the rows, columns, and main diagonals add to the same sum. Use your colculator to see if this square is a magic square. Yes or no?

Name_____

INTRODUCTION TO WORD PROBLEMS

In each sentence an important word is underlined. By reading the sentence, determine the meaning of the underlined word.

A. Twice 6 is 12.

B. 3 times 5 is 15.

C. 5 increased by 3 equals 8.

D. 3 Decreased by 1 equals 2.

E. 16 is 3 more than 13.

F. 3 less than 5 equals 2.

G. If 8 is added to 5, the result is 13.

H. 15 diminished by 4 equals 11.

I. The sum of 9 and 25 is 34.

J. 7 is larger than 5.

K. 8 is smaller than 15.

L. Separate 17 books into 2 piles.

M. In terms of 6 and 3 write 18.

N. 7 and 8 are consecutive integers.

O. An even integer divided by 2 does not have a remainder.

P. An odd integer divided by 2 has a remainder of 1.

Now match the word in column I with the words or phrase in column II. Place the number that matches the letter in the box containing that letter in the magic square below. Find the magic number by adding the columns in the square up, down, and corner to corner. The number will be the same added from any direction.

Column I

A. Twice
B. Times
C. Increased
D. Decreased
E. More than
F. Less than
G. The result is
H. Diminished
I. Sum
J. Larger
K. Smaller
L. Separate
M. In terms of
N. Consecutive
O. Even integers
P. Odd integers

Column II

1. To multiply by two
2. To break into parts
3. Represented by 2x
4. is less
5. The lesser
6. to multiply
7. is greater
8. Represented by 2x + 1
9. The one that follows
10. Equals
11. To make smaller
12. The answer in addition
13. Multiply
14. To subtract
15. Represent
16. The bigger
17. To make bigger
18. Divide

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

The magic number is _____

Pattern Gazing

Teacher Notes for Student Worksheets
(from The Mathematics Teacher: January, 1979)

Materials: Set of 2 worksheets per student
Calculators

Objectives: Students will search for, and apply, patterns as a problem-solving technique.

Instructions: Students will require help formulating a generalization of each pattern in mathematical terms. This activity could be used during the algebra unit as an application of variable use or during the whole number unit as an introductory activity in problem-solving through pattern observation.

Answers:

1. $10 = 100$
   $13 = 169$
   $S = n$

2. $-10; -22$
   $S = N$ if N is odd
   $-N$ if N is even

3. $14 \times 15 = 210$
   $25 \times 26 = 650$
   $S = N(N + 1)$

4. $\frac{(18)(19)}{2} = 171$

   $\frac{(44)(45)}{2} = 990$

   $S = \frac{N(N + 1)}{2}$

Mathematical formulas can be "explained" by the student without these symbols.

Pattern Gazing Name _____

Sheet 1

(1) Complete this table to see what happens when we add odd numbers.

Series	No. of Addends	Sum
1	1	1
1 + 3	2	4
1 + 3 + 5		
1 + 3 + 5 + 7		
1 + 3 + 5 + 7 + 9		
1 + 3 + 5 + 7 + 9 + 11		

Can you find a way to calculate the sum without adding each term?

If so, use your rule to calculate these sums:

1 + 3 + ... + 17 + 19 = _____

1 + 3 + ... + 23 + 25 = _____

(2) Let's see what happens when we alternately add and subtract odd numbers.

Complete the table.

Series	No. of Addends	Sum
1	1	1
1 - 3	2	-2
1 - 3 + 5		
1 - 3 + 5 - 7		
1 - 3 + 5 - 7 + 9		

Can you find a way to calculte the sum without alternately adding and subtracting each term? If so, use your rule to calculate these sums:

1 - 3 + ... + 17 - 19 = _____

1 - 3 + ... + 41 - 43 = _____

Write your rule in words or symbols. _____

_____

_____

Pattern Gazing Name _____

Sheet 2

(3) Let's try adding even numbers.

Series	No. of Addends [redacted]	Sum [redacted]
2	1	2
2 + 4	2	6
2 + 4 + 6		
2 + 4 + 6 + 8		
2 + 4 + 6 + 8 + 10		
2 + 4 + 6 + 8 + 10 + 12		

Can you find a way to calculate the sum without adding each term?

If so, use your rule to calculate these sums:

2 + 4 + 6 + ... + 26 + 28 = _____

2 + 4 + 6 + ... + 48 + 50 = _____

Write your rule in words or symbols. _____

_____

(4) Let's see what happens when we add both odd and even numbers.

Series	No. of Addends [redacted]	Sum [redacted]
1	1	1
1 + 2	2	3
1 + 2 + 3		
1 + 2 + 3 + 4		
1 + 2 + 3 + 4 + 5		

Can you find a way to calculate the sum without adding each term?

(Hint: Compare chart 4 with chart 3)

If so, use your rule to calculate these sums:

1 + 2 + ... + 17 + 18 = _____

1 + 2 + ... + 43 + 44 = _____

Write your rule in words or symbols. _____

_____ _____

_____

Coordinate Geometry

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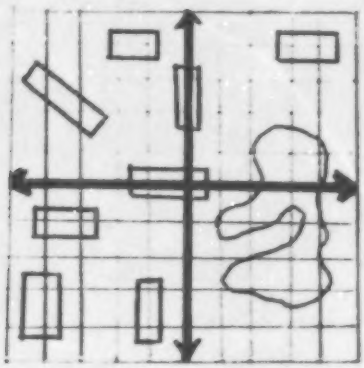
Game: Treasure Hunt

Players: Two or more

Materials: Coordinate grids for each "pirate" transparent coordinate grid for "the captain."

Object: Discover the captain's treasure



How to Play:

1. Each pirate marks one grid "My Map".
2. The captain marks the transparent grid "Captain's Map".
3. On the "Captain's Map", the captain draws any shape island and locates a point for the treasure. Sixteen galleons, each covering 2 grid points, are also drawn.
4. A pirate calls out coordinates of a point.
5. The captain tells the pirate whether that point is on land, sea, a galleon, or the treasure.
6. The pirate then uses the code to mark this information on his own map.
7. Continue play by alternating turns, allowing each pirate to call out coordinates.
8. A new captain is chosen when a pirate names the coordinates of the captain's treasure.

Line graphs/Equations

Name _____

Fill in the table and plot the graph for each of the equations.

1. $y = x + 4$

x	y
-2	
0	
2	
4	

2. $y = 3x + 2$

x	y
-1	
0	
1	
2	

3. $y = 5x - 3$

x	y
3	
2	
1	
0	

4. $y = 1/2x + 3$

x	y
-2	
0	
2	
4	

5. $y = 2/3x - 1$

x	y
-3	
0	
6	
9	

6. $y = -x + 3$

x	y
-2	
0	
3	
5	

7. $y = 2x + 6$

x	y
4	
0	
-4	
-6	

8. $y = -2x + 1$

x	y
-2	
0	
2	
4	

Microcomputer Unit

Straight Line Graphs

Teacher Notes for Student Worksheets
(From The Mathematic Teacher: March, 1983)

Materials: Disk (with program enclosed typed in)
Set of worksheets for each student
(Sheet 3 optional)

Objectives: Students will generalize the effect of changing, and positive and negative, m's and b's in the graphs of equations in the form $y = mx + b$.

Students will use the microcomputer to enter data and observe results.

Instructions: Ideally, enough computers should be available for students to work in small groups. Alternatively, the whole class can use one computer with a large monitor.

For classes unfamiliar with computer use, preliminary instructions on booting the disk and entering data will be necessary. The teacher must prepare the disk(s) ahead of time by typing in the program reproduced here.

Student sketches on the worksheets should be done free-hand so that the emphasis is on general orientation rather than precision.

SLOPE PROGRAM

For use on Apple Computers

Enlarge (double)

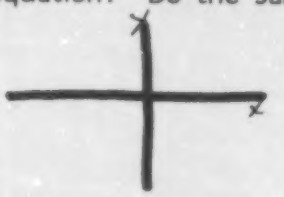
TABLE 1

```
10  TEXT : HOME
20  VTAB 12
30  PRINT "THIS PROGRAM GRAPHS STRAIGHT LINES"
40  PRINT : PRINT "IN THE GENERAL FORM
      Y = M*X + B"
50  FOR N = 1 TO 5000: NEXT : REM     PAUSE LOOP
60  HGR
70  PRINT : POKE 37,20: PRINT
80  PRINT : PRINT "GIVEN THE GENERAL FORM
      Y = M*X + B"
90  PRINT : PRINT "INPUT M,B      ";
100  INPUT M,B
110  PRINT : PRINT : PRINT
120  REM   DRAW AXES
130  HPLOT 140,0 TO 140,159
150  HPLOT 0,80 TO 279,80
170  FOR H = 0 TO 270 STEP 10
180  HPLOT H,77 TO H,83
190  NEXT
210  FOR K = 0 TO 160 STEP 10
220  HPLOT 137,K to 143,K
230  NEXT
240  HPLOT 271,65 TO 277,71
250  HPLOT 277,65 TO 271,71
260  HPLOT 147,0 to 151,6
270  HPLOT 155,0 TO 147,12
280  REM     PLOT THE STRAIGHT LINE
290  FOR X = - 14 TO 13.9 STEP .1
300  LET Y = M * X + B
310  IF Y > 8 THEN 340
320  IF Y < - 7.9 THEN 340
330  HPLOT 140 + 10 * X,80 - 10 * Y
340  NEXT X
345  REM     PRINT LINEAR EQUATION
350  PRINT : POKE 37,20: PRINT
360  PRINT "THIS IS THE GRAPH OF Y = "M" * X + B
370  PRINT
380  PRINT "1=ANOTHER GRAPH  0=QUIT";
390  INPUT Z
400  PRINT : PRINT
410  IF Z = 1 THEN 60
420  TEXT : HOME
```

BEST COPY AVAILABLE

MICROCOMPUTER UNIT: Graphing Straight Lines

1. In the equation y = m * x + b, let b = zero so that y = m * x. When the computer prompts you, enter the values for m and b and press RETURN. When the computer graphs the line, sketch the graph and record the equation. Do the same for (b) and (c).



(a) m = 1/4 b = ∅ (b) m = 1 b = ∅ (c) m = 2 b = ∅

equation _____ equation _____ equation _____

(d) As m increases, what happens to the graph? _____

2. Again let b = zero (y = m * x) and substitute for m each of the following numbers in turn. Sketch the graph, as shown on the monitor, and record the equation.

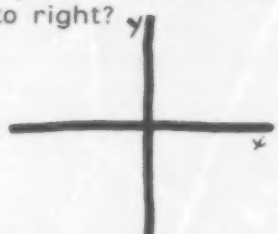
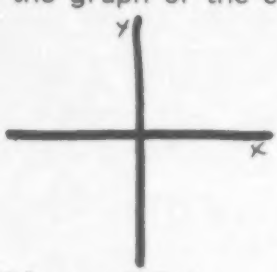
(a) m = -.25 b = ∅ (b) m = -1 b = ∅ (c) m = - 2 b = ∅

equation _____ equation _____ equation _____

(d) As m decreases i.e.. gets larger negatively, what happens to the graph?

_____

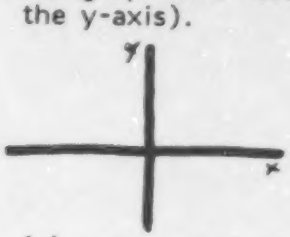
3. Without using the computer, sketch what you think each of the following equations looks like. Will the graph of the equation fall or rise from left to right?

(a) y = -1/2 * x (b) y = 3 * x (c) y = 3/4 * x

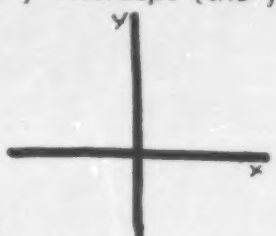
(d) Now have the Apple plot each equation in turn to see if you were right Correct your sketches if necessary.

4. Have the computer plot each of the three lines below. For each line, sketch the graph and record the y-intercept (the y vlaue where the line crosses the y-axis).



(a) y = -x + 3

y-intercept_____



(b) y = 2x - 2

y-intercept_____

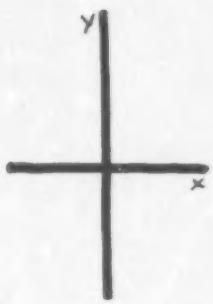
(c) y = 1/2x + 1

y-intercept_____

(d) In the equation y = m * x + b, b is the _____

5. In the equation y = mx + b, the coefficient of x (i.e., m) is called the slope of the line. Study the equations below and, without using the computer, determine the slope and the y-intercept; then sketch the line.

(a) y = -2x + 2

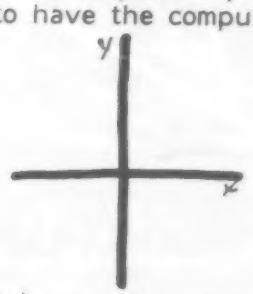


(b) y = x + 4

(c) y = 1/4x + 1

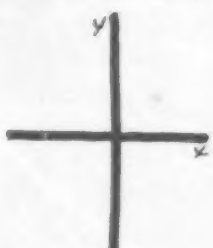
(d) Now have the computer plot each equation to see if you were right. Correct your sketches if necessary.

6. In the equation y = mx + b, let m = zero so that y = b. Run the program to have the computer graph each equation below. Sketch the graphs.



(a) y = 4

(b) y = 1



(c) y = -5

(d) Generalize: When the slope is zero, how are the lines positioned?

_____

MICROCOMPUTER UNIT: Grphing Straight Lines

QUIT the program SLOPE and type this new program line: 39zero 1FZ = 1 THEN 8zero. Then press RETURN.

This modified program will now plot several lines on the same axes.

7. Type RUN and then have the computer plot each pair of lines on the same axes. After each pair, QUIT the program and RUN again for the next pair. Sketch the results below.

(a) $y = x + 3$
$y = x + 5$

(b) $y = -.5x + 2$
$y = -.5x + 4$

(c) $y = 1.6x - 3$
$y = 1.6x + 2$

(d) The two lines in each pair are (perpendicular) (parallel) (not related). (Cross out wrong answers.)

(e) Generalize: Two lines are _____ if _____

_____.

8. (a) RUN this same modified program to plot the line $y = 1/4x - 1$.

(b) Then experiment with different values of m in the equation $y = mx - 3$ to find the line through (0, -3) that is perpendicular to the first line.

(c) The lines $y = 1/4x - 1$ and $y = \square x - 3$ are perpendicular. The product of their slopes is _____

(d) Does the relationship in (c) always hold for perpendicular lines? Test the conjecture by running the program again with a pair of lines of your choice.

Computers

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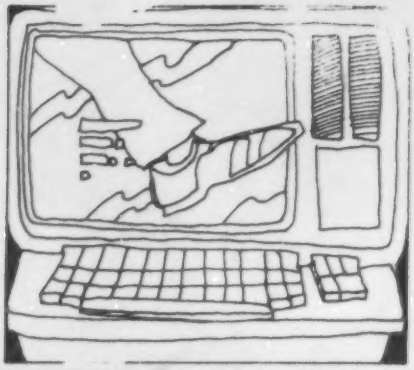
Basic Computer Commands



CARD 1

1. Turn on the computer
2. When the machine is ready -

(a) Type in your name
(b) Press the RETURN key (this sends the information into the computer.
(c) What happens?

CARD 2

No, you didn't do it wrong. The computer can be very smart, but sometimes it is really dumb. It needs to be told exactly what to do.

Try this:

1. Type in PRINT "LUCY". Press RETURN
2. Type in PRINT SNOOPY. Press RETURN

Ooops! What happened? Look at both steps- can you figure out the error? If not, try this:

3. Type in PRINT "HI". Press RETURN

(continue on Card 3)

CARD 3 ON APPLE COMPUTERS, USE "HOME"

4. When you have figured it out, have the computer write -

(a) your name
(b) your school's name
(c) your best friend's name
(d) a secret message
(e) "Computers are fun!"

You're doing just fine. Now we're ready to get fancy. Here's a program for you to try. (Don't forget to press RETURN after each line.) Type in:

```
NEW
10 CLS*
20 PRINT"CHARLIE BROWN"
30 GOTO 20
RUN
```

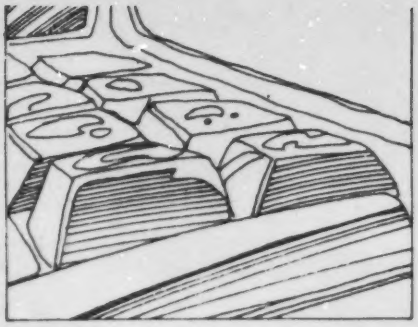
CARD 4

This computer does some terrific things. Let's try another one. First, press the BREAK key.

Type in:

```
NEW
10 CLS
20 PRINT"COMPUTERS ARE GREAT!"
30 GOTO 20
RUN
```

When you're convinced computers are great, press the BREAK key.



CARD 5

Okay -here's a new one.

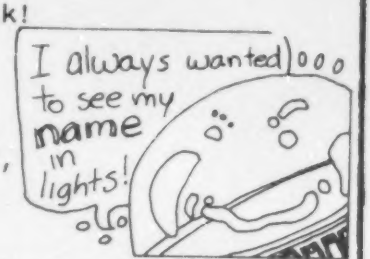
Type in:
20 PRINT"_____";
RUN (Put your name here.)

Had enough? Press BREAK.

Now, type LIST to see your program.

Here's a new trick!

Type in:
NEW
10 CLS
20 PRINT "R2D2",
30 GOTO 20
RUN



Do you remember how to interrupt the program?

CARD 6

Type in RUN. Press BREAK.

Type in RUN. Press BREAK.

Confused? It's not hard to explain. Let's try something else. Type in:
20 PRINT "IT'S MAGIC!", RUN

Press BREAK.

Type in RUN.

Type in LIST to see the program.

Your program will stay in the computer's memory until you type in NEW or turn off the power.

CARD 7

Check yourself
1. Whenever you want to clear out the memor type in _____.
2. When you finish typing a line, press _____.
3. When you want to see the computer follow the directions in your program, type _____.
4. When you want to stop a program that keeps running, press_____.
5. When you want the computer to list your program, type _____.

Now it is time for you to become a
1. Write a program that prints your first name in columns that fill the screen.
2. Write a program that fills the entire screen with the name of your school.

CARD 8 (working with numbers)

Many people think computers are overgrown calculators - but we haven't done anything with numbers yet. Computers can do much more than a calculator. So you can see that it is pretty good in mathematics, too, let's do some mathematics.

Type in:
NEW
10 PRINT 5 + 3
20 PRINT 10 - 4
30 PRINT 4 + 7 + 9 + 8 + 6 + 3 + 2
RUN
(Pretty fast, huh?)
Add this line to your program: 5 CLS
LIST your program.
RUN your program.

CARD 9

Mmmmm, I forgot the problems! Now, how can I get the computer to print the problems and answers? (You know teachers, they always want the problems and answers!)

1. Write the program
2. RUN it.
3. If it doesn't work the first time, LIST it. See if you can figure out what is wrong. This is called debugging a program- getting the bugs (or errors) out of it.
4. Compare your work with the solution on the next card.

CARD 10

Here is my program. See if you can figure out how it works.

```
NEW
10 PRINT "5 + 3 ="; 5 = 3
20 PRINT "10 - 4 ='; 10 = 4
30 PRINT "4 + 7 + 9 + 8 + 6 + 3 + 2 =";
4 + 7 + 9 + 8 + 6 + 3 + 2
5 CLS
RUN
```

LIST the program to see what happens to line 5. Can you write a program that gives this output?

```
15 - 8 - 3 = 4
3 + 8 + 10 = 21
100 + 350 + 696 + 2537 + _____
```

(Let the computer do this one!)

CARD 11

Try this:

Type in PRINT 5 x 8
What happens? Try another multiplication fact.
Type in PRINT 40 - 8.
Can't find a key for - ?

The computer has a special symbol for multiplication and a special symbol for division. (Well, something had to be a little more difficult!)

Try this:

Type in PRINT 5* 8.
Type in PRINT 40/8.

CARD 12

Now you are ready to write a program that gives this output:

(1) 4 + 8 = 12
(2) 173 - 27 = 146
(3) 6 x 3 = 18
(4) 27/3 = 9

Note in (3), you can use x for multiplication problems that you want printed on the screen, but you must use * when you are ready for the computer to figure out the answer.

Time to write a program! Make up 5 arithmetic problems for the computer to solve. When you RUN the program, have it show the problem and answer.

CARD 13

You have just written your very first "fancy" program. You want the world to know it's yours!
Add this line to your program:
5 REM THIS PROGRAM WAS WRITTEN BY _____
(your name)
LIST and RUN the program.

Now what!
What happened when you ran your program? If you said nothing other than the problems and answers, you are absolutely correct.
What happens when you list your program? Your name appears again. REM is short fr. REMark. It allows you to make notes when you write your program, without the notes showing up when you RUN the program. REMarks stay in the memory but do not affect your program.

CARD 14

Now you are ready to get fancier with numbers. Try another one. Type in:

```
NEW
10 CLS
20 Let A = 14
30 Let B = 7
40 PRINT A + B,A -B, A*B,A/B
RUN
```

Can you explain what happened? Remember that A and B are places in the computer's memory where numbers can be stored. Now change lines 20 and 30 so that A and B have different values.

CARD 15

Can you solve this?

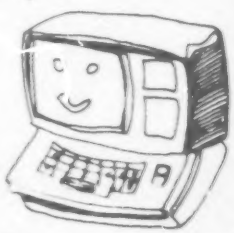
Problem:
Take the short program on card 14 and change it so that when it is run the computer will print the problems and the answers.
Hint: You will have to change line 40 and add some more lines.

Try this program:

```
NEW
10 CLS
20 LET P = 21
30 LET Z = P + 10
40 LET y = Z + 100
50 LET Q = P + Z + Y
60 PRINT P,Z,Y,Q
70 PRINT Q,Y,Z,P
```

CARD 16

Up until now, you have been giving me the directions and I have followed them! I hope you noticed that I do exactly what you tell me to do! Did you know that we have been speaking a special computer language called BASIC? I know it seems like English, but there are only certain words that I understand. Some of them have been PRINT, GOTO, CLS, REM, and LET. These words are called BASIC statements. You'll be learning another statement soon so that we can talk to one another. LIST, NEW, RUN, and BREAK are called BASIC commands. Do you know why?



CARD 17

Type in this program:

```
NEW
10 CLS
20 PRINT "GIVE ME A NUMBER."
30 INPUT A
40 PRINT "GIVE ME ANOTHER NUMBER."
50 INPUT B
60 PRINT "THEIR SUM IS";A + B
70 PRINT
80 GOTO 20
```

Do you remember how to stop the program?

CARD 18

How about words? Try this:

```
NEW
10 CLS
20 PRINT " WHAT IS YOUR NAME?"
30 INPUT A$
40 PRINT "HELLO,"A$
50 PRINT "I AM IGOR, THE COMPUTER."
60 END
```

Notice the $ after the variable. It allows you to input words rather than numbers. You can use any letter of the alphabet with a $ to input words.

CARD 19

Type in:

```
NEW
10 CLS
20 PRINT "WHAT IS YOUR
        FAVORITE COLOR?"
30 INPUT A$
40 PRINT "WHAT IS YOUR
        FAVORITE ANIMAL?"
50 INPUT B$
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT C$
80 PRINT C$;"HAS A"; A$""; B$;"."
90 END
```

Line 80 is rather tricky. Type it again without the punctuation marks. What happens? Experiment.

CARD 20

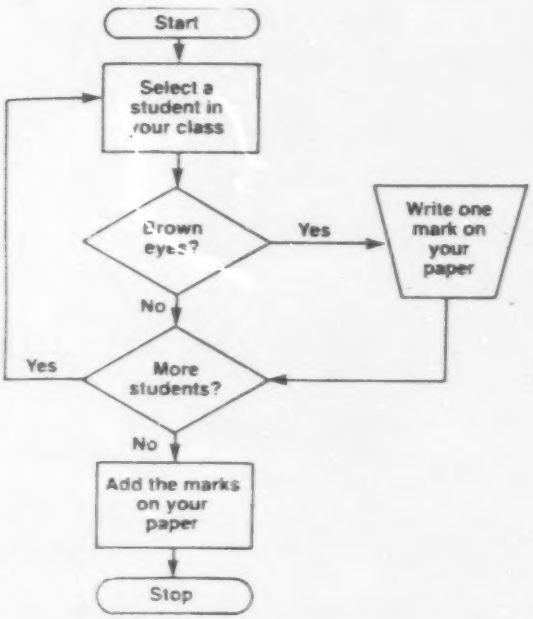
More programs for you to try-

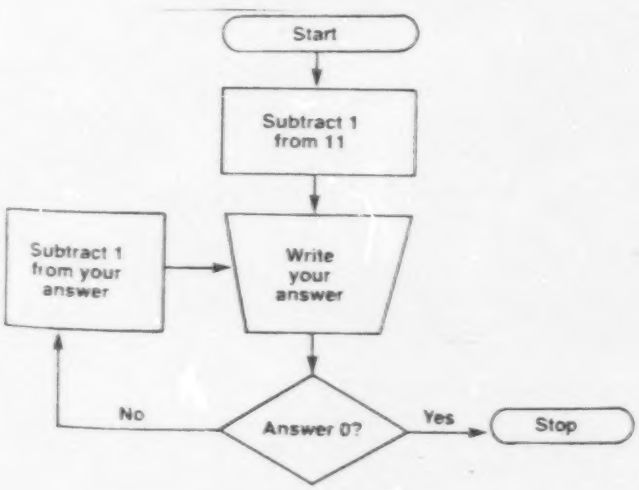
1. Write a program that allows you to give the computer 3 factors. The computer then multiplies and gives you the answer. (Try getting fancy!) Hint: See card #17.
2. Write a program that asks for someone's name and then fills the screen with that name. Can you change it to have four columns with the name?
3. Write a program using INPUT statements that ends in a funny story using the information-like Mad Libs.

NAME_____

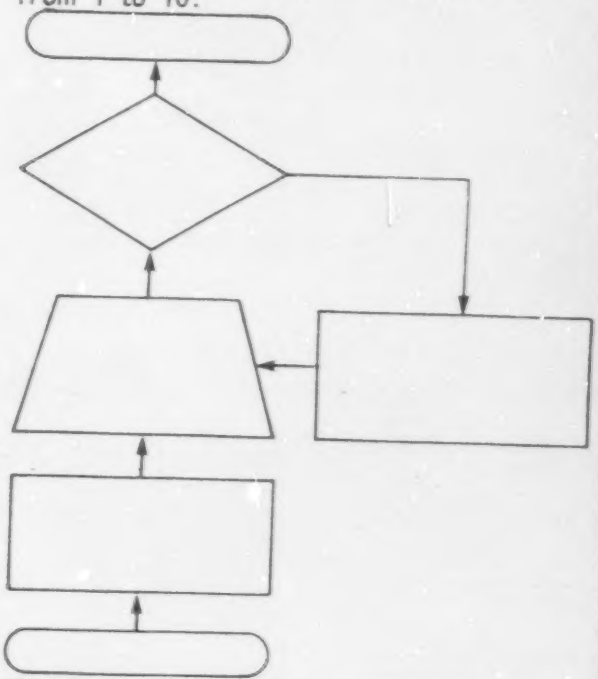
Computer Road Maps

1. Follow the directions of the flowcharts below. What job did each have you do?



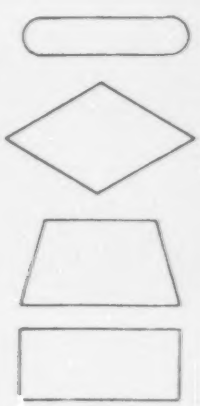


2. Fill in the flowchart below to give directions for writing the numbers from 1 to 10.



3. Match the flowchart symbols below with the kinds of messages they give.

Start, stop
Directions
Decision
Recording



NAME_____

Program the Computer

Sample: Forty-five students tried out for the team. Twenty-six were males. How many were females?

The program at the right tells the computer to subtract 26 from 45 to solve this problem.

```
10 READ A,B
20 LET C = A - B
30 PRINT C
40 DATA 45,26
50 END
```

Write computer programs for the following problems. The computer symbols for the operations are as follows: + (add), - (subtract), * (multiply), and / (divide).

1. Five people each worked 23 hours on making the scenery for a play. How many hours did they work altogether?

2. The school sold $354 worth of tickets at $3 each. How many tickets were sold?

3. One hundred eight charis were lined up in 4 rows. How many chairs were in each row?

4. Twenty-seven students are on the tennis team and 39 others are on the track team. How many students are on the track and tennis teams?